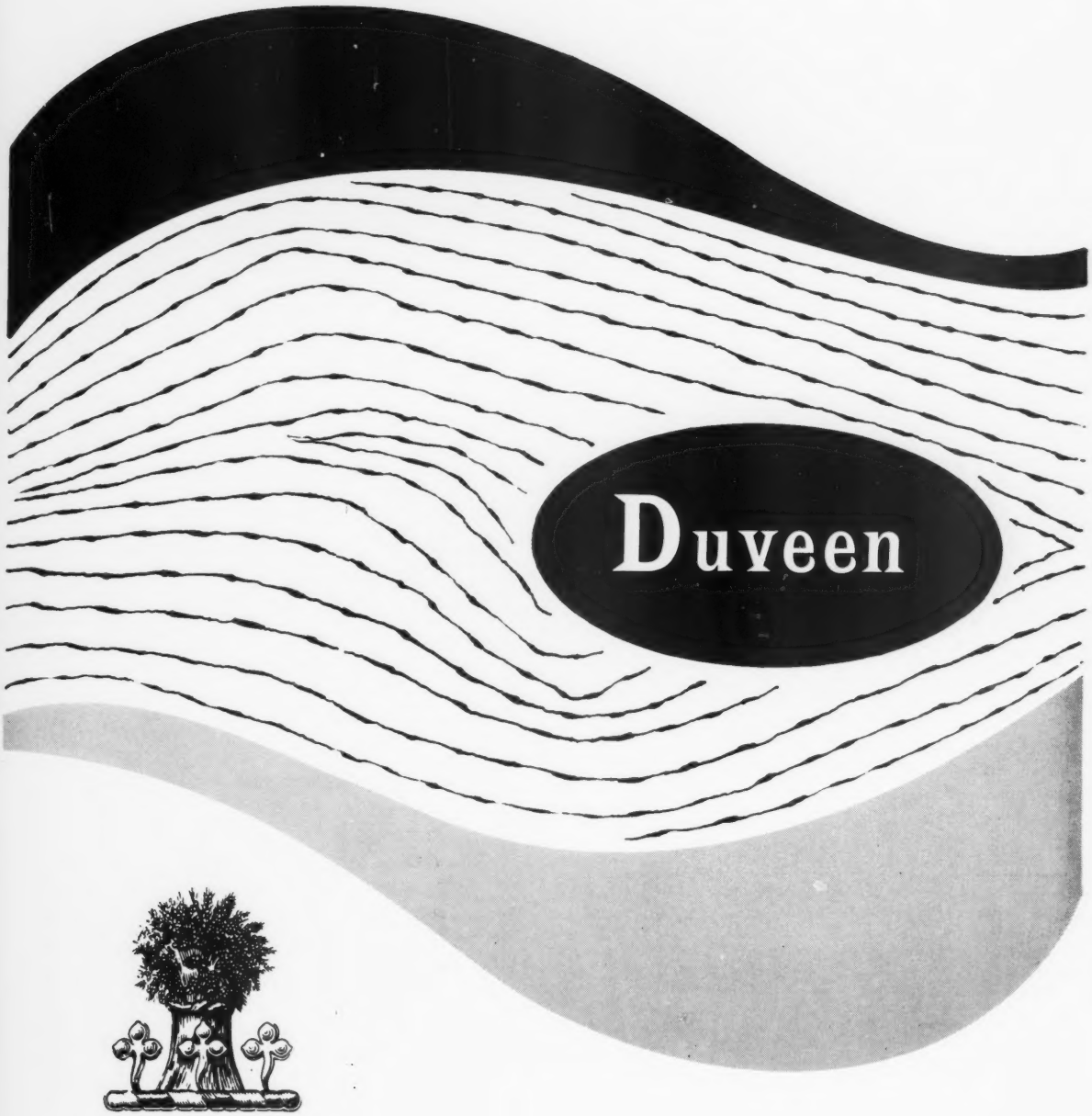

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Drug and Cosmetic Industry

February 1957 Vol. 80 No. 2

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U.S.I. CHEMICAL NEWS

Feb. ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1957

Ludlow Succeeds Keane as Director of U.S.I. Sales

Alden R. Ludlow, Jr. has been named Director of Sales for U.S.I., succeeding Lee A. Keane who has just retired. Mr. Ludlow has been Manager of Alcohol Sales for the past ten years.

He will now have full charge of the nationwide U.S.I. sales organization, responsible for marketing all of the company's product lines.

Alcohol Reduces Friction In Aluminum Grinding, Says Russian Report

A 44% decrease in friction when grinding aluminum with the aid of ethyl alcohol, compared with results obtained in air, is reported by a Russian experimenter at the Siberian Physico-Technical Institute. At the same time it was noted that abraded mass decreases 34% and specific energy 14% compared with results obtained in air.

The investigation was conducted to learn more about how liquids actually aid in the cutting and grinding of metals. Some Russian research men have claimed that these liquids loosen the metal molecules at the working surface. Others have deduced that they make the metal more brittle.

This investigator has concluded, in the case of grinding aluminum with the aid of ethyl alcohol, that the liquid forms a buffer layer which decreases the pressure of the load and so decreases the force of friction.

Have You a New Product To Tell the World About?

Make it routine to send your publicity releases on new products and developments to the Editor of U.S.I. Chemical News, often called the "Front Page of the Chemical Process Industries." The issue you are reading right now will be printed in over 250,000 copies of the leading publications serving the chemical and related fields. The Technical Developments column alone will probably produce over 600 inquiries, judging from the past average. You incur no charges or obligations by sending us your new product releases. The material will be judged and used solely on the basis of newsworthiness and space limitations. And of course we cannot guarantee that your item will definitely appear because of these considerations.

Address the Editor, *U.S.I. Chemical News*, U.S. Industrial Chemicals Co., Division of National Distillers Products Corporation, 99 Park Ave., New York 16, N. Y.

Medium-Density Polyethylene Is Now Available from U.S.I.

Expansion to 100 Million Pounds per Year Will Place Plant Among World's Largest; Output to Include Conventional and Higher Density Resins

New production techniques are yielding higher density polyethylene resins at the Tuscola, Illinois plant of U.S.I.'s subsidiary, National Petro-Chemicals Corporation. These materials are designed for use where the conventional (low-density) resins do not quite meet requirements for certain applications. They have greater stiffness and tensile strength than the conventional grades, and a higher softening point. Low temperature brittleness and vapor permeability characteristics also improve with increasing density. On the other hand, as density gets higher, film brittleness tends to increase while tear and impact strengths tend to decrease.

The MCA Technical Data Book for Plastics identifies polyethylene resins according to densities in the following manner:

LOW DENSITY	— 0.912 to 0.925
MEDIUM DENSITY	— 0.926 to 0.941
HIGH DENSITY	— 0.942 to 0.965

Expansion Doubles Plant Size

Total resin capacity of the polyethylene unit will be 100 million pounds per year when present expansion is completed. This unit had a design capacity of 26 million pounds per year when it came on-stream in February of 1955 but is currently operating at twice that output. The ethylene plant and the extraction, fractionation and power plants at the integrated Tuscola petrochemical facilities are also being enlarged to supply the polyethylene plant.

MORE

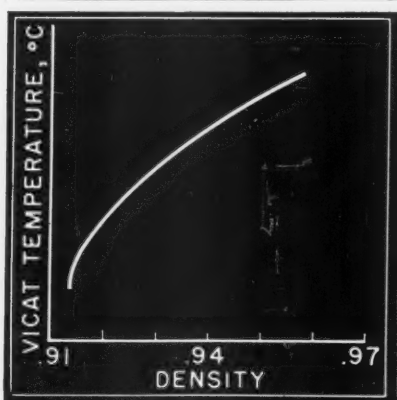
New Volume on Metallurgy Of Titanium Just Published

A 466-page reference book on "Titanium" has just been published as Volume 4 in a series on the "Metallurgy of Rarer Metals" by the British writing team of McQuillan and McQuillan. Comprehensive and highly readable, the volume combines both academic and industrial findings on titanium, covering its history and occurrence, recovery from ores, preparation, purification, properties and reactions.

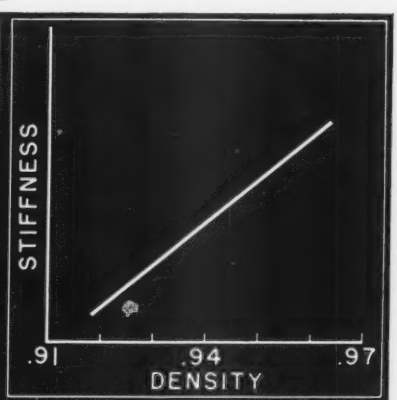
The larger part of the book is concerned with the properties of titanium and its alloys. One long chapter deals with fabrication and joining. Other sections cover physical properties, mechanical properties, heat-treating and mechanical properties of titanium-rich alloys, deformation mechanisms and textures, transformations in titanium and its alloys.

A chapter on the constitution of titanium alloys describes the problems which arise in studying these systems and goes into the determination of phase boundaries. Binary and ternary systems are discussed. A separate chapter is devoted to titanium metallography.

The important subject of titanium's reactions with gases is covered fully, with particular reference to oxygen, nitrogen and hydrogen. The behavior of titanium in aqueous solutions and in the presence of common corrosive agents is also included.



Graph illustrates how heat distortion (VICAT) temperature varies as density of polyethylene increases, molecular weight and molecular weight distribution remaining constant.



Graph illustrates how stiffness varies as density of polyethylene increases, molecular weight and molecular weight distribution remaining constant.

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Feb. ★ **U.S.I. CHEMICAL NEWS** ★ 1957

CONTINUED

Expansion

High Pressure Process Modified

By modifying high pressure techniques now employed at Tuscola for making conventional, low-density resins, the plant is also able to manufacture medium and high density materials in the same equipment. U.S.I. will concentrate, for the present, on producing medium-density polyethylenes by these modified techniques.

U.S.I. has been marketing conventional, low-density polyethylenes (0.92) under the trade name PETROTHENE® since February of 1955. In use, the PETROTHENES have shown an inherent superiority in certain properties such as stress crack resistance, processibility and uniformity. Field tests on the new medium-density resins, closely akin to the conventional grades, have indicated similar superiority. However, as density is increased, there is the possibility that these proven properties could vary. A great deal of work must be done to develop the best of all possible high-density resins, and so U.S.I. plans to move slowly on the production of these materials. The goal: to improve other properties without sacrificing superiority in those properties already proved.

Resins Can be Tailor-Made

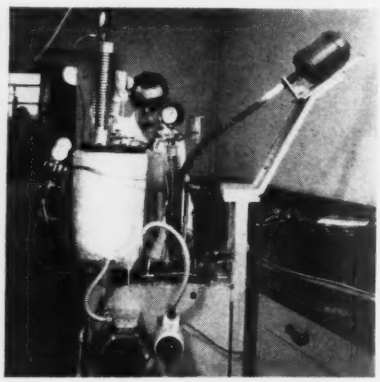
Flexibility of the production techniques now being employed at the Tuscola plant adds a new dimension to polyethylene's range of properties. This plant has been supplying plastics processors with polyethylene grades especially suited to particular processing conditions and end uses. Now with the ability to vary density, the plant can provide the same property variations as before—at new density levels. As a result, processors of polyethylene can obtain a tremendous variety of raw materials with a wide range of characteristics.

Methionine Counteracts Toxin in Plant Disease

The poisonous action of a naturally occurring antimetabolite of methionine which causes wildfire disease in tobacco plants can be overcome by methionine, according to a recently published report.

Some Grignard Reagents Can Now be Prepared by An Easy Sodium Route

An economical route has now been opened to the preparation of certain Grignard reagents difficult to obtain by direct reaction from chlorohydrocarbons. Recent studies at the U.S.I. Research Laboratories in Cincinnati have demonstrated that organomagnesium compounds may be prepared in hydrocarbon solvents from organosodium compounds and anhydrous magnesium chloride. The use of ethers may be avoided completely if desired. Organolithium compounds may be similarly prepared from organosodium compounds and anhydrous lithium chloride.



Sodium dispersions for preparation of organosodium compounds can be prepared in this package pilot plant unit, which is available on loan from U.S.I. Research Division.

These developments will be discussed in detail by Dr. John Nobis of the U.S.I. Research Division in a paper to be presented before the ACS Symposium on Metal-Organic Compounds this April. The paper, entitled "Use of Organosodium Compounds for Preparation of Other Carbon-Metal Bonds" will also describe reactions with the halides of boron, aluminum, silicon, titanium, tin and phosphorus, or in some cases, their alkoxides.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing the Editor, U.S.I. Chemical News.

New x-ray microscope just developed promises to reveal hidden facts concerning corrosion in metals, effect of contaminants in metals, soundness of electroplated coatings, etc. Also probes internal structure of foods, chemicals. **No. 1200**

Polyethylene Buchner funnel of 2-piece construction can now be obtained, claimed sturdy and easily cleaned. Takes 70 mm. filter paper. Perforated plate diameter 71 mm. **No. 1201**

Heptane and hexane in spectrophotometrically-pure grades are now available commercially. Each bottle is supplied with the absorbance curve for that particular lot, thus guaranteeing that impurities are negligible. **No. 1202**

New battery with practically unlimited shelf life is said to withstand temperatures from —70 to 170°F. Designed for low-current use, it weighs less than an ounce, is of completely dry construction, is rated at 95 volts. **No. 1203**

Spent fuel elements from AEC Materials Testing Reactor now available in limited quantity for rental to licensees as source of gamma radiation. Priority given to requests for elements for research and development activities. **No. 1204**

A micro-image data storage and retrieval device recently developed gives rapid access to any of 10,000 frames recorded in miniature on a 10 in. sq. sheet of microfilm. It automatically and continuously searches the film and photographs a frame every 2 seconds. **No. 1205**

Titanium in the form of a 50% cationic colloidal dispersion is now offered to the textile industry as a duller for synthetic fabrics and fibers. Said to give even exhaustion, good light reflectance and soft hand. **No. 1206**

Fluid turbidity can now be continuously monitored with a new dual beam unit, manufacturer claims. Instrument compares light scattered by suspended particles with light transmitted by the fluid. Usable on streams up to 3" diameter. **No. 1207**

N-Acetyl DL-Homocysteine Thiolactone is now commercially available for use in medical research, food technology, rubber stabilization, textile processing. Reacts with amino groups of amino acids, peptides or proteins to form new peptide bonds and a free sulfhydride group. **No. 1208**

Hot plate — magnetic stirrer combination is now offered to speed mixing and dissolving in the lab. Motor is effectively insulated from hot plate, it is claimed, and copper-jacketed heating elements eliminate magnetic interference and corrosion. **No. 1209**

PRODUCTS OF U.S.I.

POLYETHYLENE RESINS:

PETROTHENE® 100 Series—high quality resins for uses demanding outstanding properties.

PETROTHENE 200 Series—general purpose resins for extrusion, injection, compression molding and paper coating.

PETROTHENE 300 Series—resins for wire covering and electrical insulation applications.

OTHER PRODUCTS:

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Inorganic Chemicals: Ammonia, Caustic Soda, Chlorine, Metallic Sodium, Sodium Peroxide, Sulfuric Acid.

Esters, Ethers and Ketones: Normal Butyl Acetate, Dibutyl Phthalate, Diethyl Carbonate, Diethyl Oxalate, Ethyl Acetate, Ethyl Ether, Acetone.

Intermediates and Fine Chemicals: Acetoacetarylides, Ethyl Acetoacetate, Ethyl Benzoylacetate, Ethyl Chloroformate, Ethylene, Ethyl Sodium Oxalacetate, Sodium Ethylate solution, Urethan USP (Ethyl Carbamate).

Animal Feed Products: Calcium Pantothenate, Choline Chloride Products, Curbay B-G® 80, Special Liquid Curbay®, DL-Methionine, Niacin USP, Riboflavin Concentrates, Vitamin B_{12} and Antibiotic Feed Supplements, Vacatone® 40, Vitamin A, D_2 and K_3 products, Antioxidant (BHT) Products.

Pharmaceutical Products: DL-Methionine, N-Acetyl-DL-Methionine, Riboflavin USP, Urethan USP, Intermediates

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99 Park Avenue, New York 16, N. Y.

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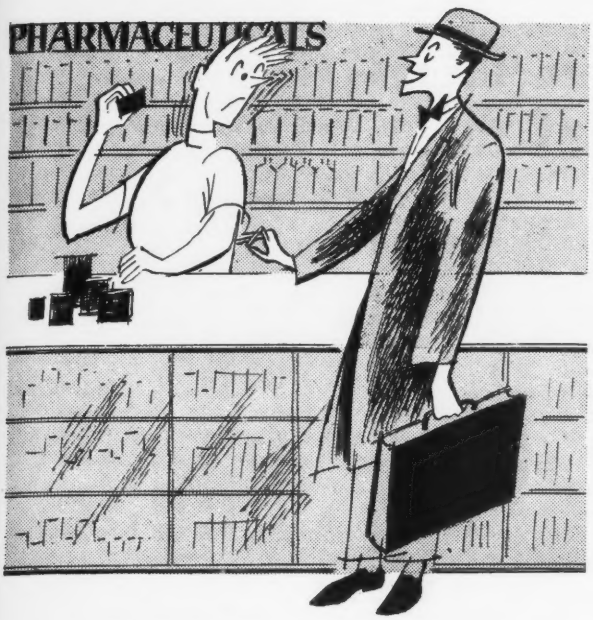

"We've really got a new one—a pleasant dream pill, wakes you up with a smile!"

Keeping Posted

Distributing New Drugs

The New Drug Branch of the Food and Drug Administration has stated its requirements in cases where the new drug is distributed by someone beside the manufacturer whose product has been licensed for sale. The cases which might exist are: 1) the repacking and marketing of the drug by a distributor under labels supplied by the manufacturer; 2) the repacking and marketing of the drug by the distributor under his own labeling; and 3) the manufacturer packages and labels finished packages of the drug under labels bearing the distributor's name for marketing by the distributor.

The FDA says: "In any of these cases, it is required that the distributor submit a statement identifying the label and labeling, including the brochure, if any, he will employ in connection with his marketing of the new drug. In addition, in situations 1 and 2 above, he is required to submit a statement describing the methods, facilities, and controls he employs in connection with the repacking and relabeling operations. These statements from the distributor may be submitted, a) through the manufacturer as part of a manufacturer's supplemental application, or b) they may be submitted directly to the Administration by the distributor as part of an original new drug application of his own. In the latter case it will also be necessary for him to incorporate directly or by properly authorized reference the pertinent information contained in the manufacturer's new drug application. "Whether the proposal is submitted as a supplemental application or an original application, the manufacturer is required to submit a statement showing that the drug he will supply to the distributor meets all of the conditions in his effective application, or specifying any changes."

More for FDA

The Federal budget requests an increase of $2.5 million in the appropriation for the Food and Drug Administration. The increase would be from $7,979,000 for fiscal 1957 to $10,554,500 for fiscal 1958.

Of this increase of 23.6 per cent, $1,327,000 would be spent for increased enforcement activities. Inspectors would be increased from 300 to 350, and 112 scientific and administrative personnel would be added. The balance would be used for replacement of equipment, establishment of a new headquarters in Washington, and for financing increased retirement benefits which are required by law. The goal for the new Washington headquarters building is to have it in operation by 1960.

Among the proposed Public Health Service appropriations, venereal disease control is up from $4,195,000 to $4,415,000; TB control up from $6,660,000 to $7,000,000; communicable disease control up from $5,750,000 to $6,260,000; hospitals and medical care up from $39,011,000 to $44,399,000, National Cancer Insutitute down from $48,432,000 to $46,902,000; mental health activities up from $35,197,000 to $35,217,000; National Heart Institute up slightly from $33,396,000 to $33,436,000; dental health activities up from $6,026,000 to $6,430,000; arthritis and metabolic diseases up from $15,885,000 to $17,885,000; allergy and infectious diseases up from $13,299,000 to $17,400,000; neurology and blindness activities up from $18,650,000 to $18,887,000.

Macy Sued Over Bufferin

Bristol-Myers Company has brought suit against R. H. Macy & Co. charging Macy with "diverting sales of Bufferin to a Macy product through false and deceptive statements." Bristol-Myers claims $90,000 as the amount of damages it has sustained and asks that this amount be trebled in accordance with law. The manufacturer also asks for a temporary and permanent injunction enjoining Macy "from continuing these unfair practices."

Bristol-Myers charges that Macy sells its own product "under various names, designations or representations such as Buffered Aspirin Macy's, Macy's Buffered

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Aspirin, Macy's Own, and Macy's Own Bufferin." Also that Macy's has used "the false description and false representation that its said product is the same as plaintiff's Bufferin."

Bristol-Myers further charges that Macy's, "when asked by its customers for Bufferin, has wilfully mispresented . . . that the word 'bufferin' is a generic and description appellation for a general type of product manufactured and sold by a number of different persons, including defendant itself, and that defendant's said product is 'bufferin.' "

Bristol-Myers further claims that it entered into an agreement on January 1, 1954 with Macy, under which, among other things, Macy agreed "to sell plaintiff's product Bufferin to any and all of its customers who might ask for such product, without hindrance or obstruction."

Hair Claims Cited by FTC

Collins Hair and Scalp Experts and two affiliated companies, Carey Hair & Scalp Experts and Winston, Ltd., Oklahoma City, are charged by the Federal Trade Commission with misrepresenting the effects their preparations have on baldness. It is charged that the preparations are falsely represented as checking thinning hair, preventing and overcoming all types of baldness, inducing hair to grow, or causing hair to become thicker. According to the Commission, officers and employees of these concerns travel about this country and Canada, setting up temporary offices, usually in hotels, giving free diagnosis and advice and recommending purchase of the various preparations for use in the home. FTC further charges that advertisements represents to baldheaded persons that theirs is a type that can be overcome by use of the preparations. Such representations are deceptive, says FTC, because they fail to reveal the material fact that in "male pattern baldness" these preparations will have no favorable influence. FTC notes that "male pattern baldness" is the cause of the majority of all cases of baldness.

Robinson-Patman Act Challenged

The question of the unconstitutionality of Section 2(d) of the Robinson-Patman Amendment to the Clayton Act has again been raised, this time by Liggett & Myers Tobacco Co. in answer to Federal Trade Commission charges that in 1955 alone, the tobacco company paid out more than $1 million in allowances to favored customers while giving no allowances to competing customers. In reply, the tobacco company maintains that Section 2(d) is unconstitutional and void for these reasons: vagueness in violation of the due process clause of the Constitution; unreasonable, arbitrary, and capticious in violation of the due process clause; unwarranted and improper delegation of legislative power by Congress to administrative officials.

It is all of ten years since a similar issue of constitutionality of Section 2(e) of the Robinson-Patman Amendment was fought all the way to the U. S. Supreme Court in the case of Elizabeth Arden and the FTC. This section is close enough to Section 2(d) to be considered the same in the court's opinion, since the Attorney General's committee to study the antitrust laws noted that the two sections are concerned with analogous marketing practices. In the Arden case the U. S. Court of Appeals for the Second Circuit found against Arden, and the Supreme Court refused to review the decision.

The interesting part of this case has to do with the final disposition of the Arden decision. At the time of the Arden decision, FTC had other cases pending and FTC believed that attorneys in these other cases would accept the Arden litigation as a test case. But following the final decision in the Arden case, these other defendants refused to be bound by the Arden decision. Later a trade practice rules conference was held and rules were eventually adopted. FTC then dropped its charges against the other companies.

It is believed that the tobacco company does not expect favorable action in the lower court, but is pinning its hopes on the Supreme Court despite the Arden decision. However, the government does not seem concerned about the constitutionality of these sections of the Robinson-Patman Amendment.

Two Million Prescriptions

Frederick D. Lascoff, who operates the famous drug store on Lexington Avenue, New York, known as J. Leon Lascoff & Son, recently announced that on November 10, 1956, the pharmacy filled Rx No. 2,000,000. On March 11, 1899, Dr. J. Leon Lascoff, the founder of the business, filled Rx No. 1, and on November 28, 1936, he also filled Rx No. 1,000,000. The increase in prescription business is clearly indicated by this record, for the first million prescriptions were filled in a period of 37 years and eight months, while the second million were filled in the almost half that time, or 20 years.

Eastman Quits Fair Trade

The weakness apparent in fair trade throughout the country was emphasized at the beginning of this year when Eastman Kodak Company announced the end of price maintenance agreements with dealers handling its amateur cameras, films, and other photographic products. Eastman has vigorously pursued price maintenance for nineteen years. In explaining its action, Eastman said in part:

"There are now sixteen states, plus the District of Columbia, where it is no longer possible to have effective fair trade agreements either because no fair trade legislation exists or because provisions of fair trade laws have been held unenforceable by the courts. This situation has made the continued existence of a retailer fair trade agreement in the remaining states increasingly difficult and unfair to retailers."

Dr. H. A. B. Dunning Fellowship

The American Foundation for Pharmaceutical Education has received a gift from The H. A. B. Dunning Foundation establishing a Fellowship in the name of H. A. B. Dunning. Dr. Dunning, long a true friend of pharmacy and largely responsible for the unique site and magnificent headquarters of the American Pharmaceutical Association in Washington, is chairman of the board of Hynson, Westcott & Dunning. Other

LATEST EDITION

Laboratory Data Sheet

VITAMIN A 'ROCHE'

Liquid vitamin A palmitate and acetate
Dry vitamin A acetate
Dry vitamin A and D_2

Roche has all popular types for your manufacturing needs

Summarized below for your convenience are facts about the many types of Roche vitamin A and vitamin A & D combinations which meet practically all pharmaceutical needs. Samples and technical literature are yours on request — without charge, of course. Ask your Roche salesman or write.

	Type & Name	Usage	Potency (in U.S.P. units per gram)	Additive	Stability	Mesh Size
LIQUID TYPES	**P1MO** Vitamin A palmitate *(liquid)*	In tablets, aqueous dispersions, capsulated products	1,000,000	Edible oil only, for standardization	Excellent	–
LIQUID TYPES	**P1MO/BHA** Vitamin A palmitate *(liquid)*	as above	1,000,000	Edible oil plus antioxidant (butylated hydroxy-anisole). Note 1.	Excellent	–
LIQUID TYPES	**P1.3** Vitamin A palmitate *(liquid)*	For oil-free prepara-tions	1,350,000 to 1,450,000	None	Excellent	–
LIQUID TYPES	**A1MO** Vitamin A acetate *(liquid)*	In oil solutions and gelatin capsules	1,000,000	Edible oil only, for standardization	Excellent	–
SPECIAL	**Type P1.8** *(liquid)* Vitamin A palmitate	For research and special production	1,650,000 to 1,800,000	None	Needs special handling	–
SPECIAL	**Type A2.9** *(crystalline)* Vitamin A acetate		2,800,000 to 2,900,000	None	Needs special handling	–
DRY TYPES	**Type 325A-32.5D** Vitamin A acetate & Vitamin D_2 *(dry)*	For tablets, capsules, vitamin-fortified powdered supplements	A—325,000 D_2—32,500	None	Excellent	40 and 60
DRY TYPES	**Type 325** Vitamin A *(dry)*		325,000	None	Excellent	40 and 60
DRY TYPES	**Type 500** *(dry)* Vitamin A acetate	For dry prepara-tions: tablets, capsules, vitamin-fortified powdered supplements	500,000	None	Excellent	40 and 60
DRY TYPES	**Type 500A-50D** Vitamin A acetate & Vitamin D_2 *(dry)*		A—500,000 D_2—50,000	None	Excellent	40 and 60

Note 1 { Antioxidant added at 10 mg. per 1,000,000 units of vitamin A.

Packaging { All Roche vitamin A is packaged to insure safety in transit and ease of handling in pharmaceutical operations.

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memorial programs of the Foundation are: Gustavus A. Pfeiffer Memorial Postdoctoral Fellowships; Edwin Leigh Newcomb Memorial Awards; Sydnor Barksdale Penick Memorial Fellowships; E. Mead Johnson Memorial Fellowships; Charles R. Walgreen Memorial Fellowships.

The $25,000 Question

Reading recently in a local New York newspaper about a fellow and his wife from Freeport, Long Island who had two sets of twin boys back-to-back, and had paid a premium of $1,875 to Lloyds of London for a $25,000 insurance policy to be paid if the next birth is a multiple one. It was thought by the doctor that at least twins are to arrive in May, although x-ray confirmation had not yet taken place. The father is a salesman for Holland Rantos.

Accepted Dental Remedies

Accepted Dental Remedies for 1957 has been made available by The American Dental Association. Designed to serve as a current handbook of dental therapeutics, the book contains a list of therapeutic agents marketed in the United States which are acceptable to the Council on Dental Therapeutics. It also includes the Council's provisions for acceptance of products, some information on standardizing agencies, and on prescription writing. A chapter on treatment of emergencies in the dental office has been added.

Dr. Holland Warns Drug Makers

In speaking on tranquilizers before a Symposiarch of the New York Chemists Club, FDA Medical Director, Dr. A. H. Holland Jr., had the following to say:

"The industry has tried to oversell these drugs, and as has happened so many times in the past, they have come pretty close to killing the goose that laid the golden egg. They oversell the doctor. They try to oversell the doctor, and in overselling the doctor, unwittingly or otherwise, he gets misled. He believes something which his subsequent experience does not confirm, and then he gets mad. And he has a perfect right to get mad because his patient might be your child or your wife or your husband, and you compromised his professional position. He is a doctor. If you don't like him, get another one. But in overselling him you have compromised his professional position. You have risked his professional reputation, and perhaps compromised the welfare of one of his patients.

"Now I don't want to overdo this, but I personally feel very strongly, and am thoroughly convinced that it is not good business to oversell. The planted newspaper article, the article in Parade Magazine in the Sunday Supplement read by ten million people, telling them how wonderful these drugs are for ill-behaved children, and if Mamma can't make them behave, go to your doctor and get a tranquilizer. This is the misuse of good drugs, of very valuable drugs. It is this kind of misuse and abuse, it is this kind of misinformation to the public, and in turn it is pressure exerted and focused on the physicians, which causes much of the trouble, and I think personally spurs most of the meetings by the National Research Council and the New York Academy of Science and others.

"You in the industry are in for a rash of papers in medical journals, the likes of which you haven't seen for a long time. Now I don't suppose it means very much except that those papers will influence your final customer, the physician, and if the doctor gets scared off the drug by his colleagues or by some sad experience of his own, or some disappointing experience of his own, frankly ladies and gentlemen I think it is poor business. I think it is short-sighted, and with good drugs it is not necessary. It's not at all necessary."

Trademark Record in 1956

A record 20,778 trademarks were registered in 1956, compared with 18,212 in 1955, and 15,939 in 1954, says the U. S. Trademark Association. Application in 1956 totaled 21,870, compared with 21,682 in 1955. Application awaiting action by the Patent Office dropped from 10,503 at the end of 1955 to only 7,475 at the end of 1956.

Trademarks were modernized by American Cyanamid Company, Armstrong Cork Company, and The J. B. Williams Company. Animated characters adopted included "Speedy" Alka Seltzer and the Piel Brothers. Smith Brothers have officially named the cough drop trademark brothers Trade and Mark.

Trademark decisions during the past year were that no likelihood of confusion exists between Hope for Perfume and Hope for denture powder, or between Toof for a treatment for athlete's foot and Stopette used in connection with "Poof—There Goes Perspiration." Likelihood of confusion was found to exist between Big 6 Six for a tonic and 666 for a similar medicine.

Rule Against Cortisone Ointment O-T-C

The Food and Drug Administration has denied proposals to permit sale without prescription of ointments and lotions containing hydrocortisone and hydrocortisone acetate, because "available evidence fails to show that these drugs are safe for use without medical supervision."

Ten pharmaceutical firms had petitioned the FDA to permit over-the-counter sale of these preparations, and on January 20, 1956, the FDA published in the Federal Register an order giving such permission. This order was challenged by members of the medical and pharmaceutical professions and a hearing was held. Based on testimony from dermatologists, the FDA reversed its proposed decision.

Evidence supporting the proposed exemptions, including evidence contained in new-drug applications, indicated that: these drugs are not absorbed through human skin in such applications; no systemic effects were observed under medical supervision; extensive use under medical supervision showed no significant adverse reactions; the preparations are effective in minor skin irritations.

Evidence opposing the proposed exemptions indicated that: newly devised laboratory procedures on small number of humans showed absorption of varying amounts through the skin and mucous membranes; evidence is insufficient to establish whether or not amount absorbed may cause significant systemic

in product development
a CHOICE *of* ANTIBIOTICS *is important*

NEOMYCIN

Effective against gram-negative organisms. Particularly suitable for lozenges and nasal preparations. Since it is not absorbed by the skin or gastrointestinal tract, it is useful against dermatologic and enteric infections.

BACITRACIN

Gram-positive effectiveness. Suitable for topical and intramuscular administration and especially important in ointments.

TYROTHRICIN

We were among the earliest producers of this first commercially-available antibiotic.

GRAMICIDIN

All the gram-positive effectiveness of Tyrothricin at one-fifth the dosage. Ideal when color, solubility and other characteristics of end-products are enhanced by lower antibiotic concentrations.

And Penick's experienced staff is best situated to assist you in selecting the right antibiotic or combination for maximum effectiveness and compatibility with your formulation. No other manufacturer offers all of these currently important antibiotics.

All of these antibiotics exhibit synergistic tendencies with the others. All are non-allergenic and rarely cause sensitivity.

When planning new pharmaceutical preparations, cosmetics, feedstuffs and other antibiotic products, it will pay you to call on Penick. We sell in bulk only and can give unrestricted consideration to your needs.

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Chemicals and Drugs

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effects or disturb glandular system; there are documented cases of serious adverse effects under medical supervision, particularly where the drugs caused the spread of infection, the presence of which was undetected by the attending physician; laymen in general cannot differentiate between skin conditions in which the drugs are indicated or condicated, there being serious concern about the spread of infection; it is impossible to write adequate directions for use because the layman is generally incapable of diagnosing conditions in which the drugs are indicated; since the drugs do not cure, but mere relieve temporarily, a layman might use the drugs beyond the time limit stated in the labeling, increasing the hazard of systemic effects. It would appear that the FDA is being a little more careful regarding over-the-counter permission than it has been in the recent past. Perhaps this is due to the criticism heaped upon this agency by pharmacists and doctors who would like to keep as many worthwhile drugs as possible under prescription control. This case appears to be somewhat parallel to the hormone cream situation. Endocrinologists testifying at the Delaney hearings some time ago said many of these creams appear to be about the most dangerous things that a woman could use. On the other hand, dermatologists told just what their local effect was, and clearly testified that they had no systemic effect, and certainly no harmful effect. It all depends upon whom you listen to. And specialists in certain fields have real blind spots so far as other fields are concerned.

Sodium Monofluorophosphate in Dentifrices

A particular difficulty of fair trade being effective in some states and not in others is that retailers complain loudly about losing business in areas where consumers can cross state lines and get cheaper prices. Also, these instances tend to brand the retailers maintaining prices as "high priced" in the minds of the consumers. Eastman has now lined up with Westinghouse Electric Company and W. A. Schaeffer Pen Company in discarding fair trade activities. In a similar field, General Electric Company and Sunbeam Corporation are still strong proponents of fair trade and are fighting vigorously in the courts to maintain their prices.

Sodium monofluorophosphate is now permitted to be used in dentifrices, according action taken by the Food and Drug Admnistration, under the following regulations which are an amendment to paragraph 130.102(a) of Part 130 New Drugs, of regulations covering new drugs:

(15) Sodium monofluorophosphate (Na_2PO_3F) preparations meeting all the following conditions:

(i) The sodium monofluorophosphate is prepared with other components in an aqueous solution suitable for household use as a dentifrice, and containing no drug limited to prescription sale under the provisions of section 503 (b) (1) of the act.

(ii) The sodium monofluorophosphate and all other components of the preparation meet their professed standards of identity, strength, quality, and purity.

(iii) If the preparation is a new drug, an application pursuant to section 505 (b) of the act is effective for it.

(iv) The preparation contains not more than 60 milligrams of sodium monofluorophosphate per milliliter and is packaged to contain not more than 3.6 grams of sodium monofluorophosphate per retail package.

(v) The preparation is labeled with adequate directions for use only as a dentifrice by adults and children six years of age and over, and includes instructions to rinse the mouth thoroughly after brushing the teeth.

(vi) The labeling bears, in juxtaposition with the directions for use, a clear warning statement against use by children under six years of age.

Eli Lilly to Metric System

As of January 14, Eli Lilly and Company completed on schedule a long-term program of conversion from the avoirdupois system of weights and measures to the metric system for internal operations. To permit a smooth, uniform operation, all Lilly suppliers have been asked to supply raw materials in containers bearing gross, tare, and net weights in metric, as well as to price invoices in metric. The purchasing division's spadework in converting the fine chemicals industry from avoirdupois to metric packaging is claimed to be a highly important factor in the internal organization's acceptance of the metric system.

With regard to gaining the cooperation and understanding of raw material suppliers in packaging and invoicing in metric units, Robert G. Weigel, manager of drug and chemical purchases, says: "It's too early to predict the degree of our success, but many suppliers have already indicated keen interest in this program and are cooperating by supplying fine and intermediate chemicals in metric packaging. One supplier is even racing to be the first in the industry to issue a metric price list."

One of the greatest tasks in the conversion was the revision in metric of 2,500 manufacturing formulas, as well as the conversion of all inventory records on approximately 1,500 raw materials. As to the advantages to be gained from the change, the company says:

"Perhaps the greatest benefit from the metric system will be realized by the product development groups which write Lilly's manufacturing formulas. Previously, when the lot size of a formula was increased or reduced, it was necessary to divide or multiply pounds, ounces, and grains, or pints, fluid ounces, fluid drams, and minims. With the metric system, a formula can be increased or reduced, in most cases, merely by shifting the decimal point, and the opportunity for error is geatly lessened."

Lilly says that the old maxim "An ounce of prevention is worth a pound of cure," has been changed at the company to "A gram of prevention is worth a kilogram of cure."

Glycerine Awards

Dr. Herbert J. Dutton, U. S. Department of Agriculture research chemist, won the first prize of $1,000 and an honor plaque in the 1956 Glycerine Research Awards for his application of a recently developed extraction technique to investigate complex natural glycerides such as linseed oil. His work is said to be a "major break-through in developing new and signifi-

cant data on fats and oils, which are mixed esters of fatty acids and glycerine."

Second award ($300 and honor plaque) went to Dr. Donald B. Zilversmit, Professor of Physiology at the University of Tennessee Medical Units in Memphis, for his use of glycerine as a suspension medium in preparing high-caloric fat emulsions for intravenous injections. Previously such fat emulsions were formulated with water were unstable because of hydrolysis of the phosphatides and triglycerides. Now they can be made stable enough for commercial production and distribution.

Third award ($200 and honor plaque) was won by Dr. Stanley G. Knight, Professor of Bacteriology at the University of Wisconsin, for establishing a glycerine derivative, triacetin, as a new fungacide.

Vitamin Foundation Grants

Fourteen new grants, for a total of $78,100 to American universities and research institutions throughout the country were made by the National Vitamin Foundation last month. The grants include:

Dr. Laurens Anderson, University of Wisconsin, Madison, $4,000 for study of the metabolism of *myo*-inostol in animal tissues.

Dr. A. E. Axelrod, University of Pittsburgh, $9,000 for study of the role of nutritional factors in antibody production.

Dr. LaRoy S. Dietrich, Columbia University, New York, $6,290 for study of pyridine nucleotide metabolism employing the niacin antagonists, 6 aminonicotinamide and 2-amino 1,3,4 thiadiazole.

Dr. Simon H. Wender, University of Oklahoma, Norman, $3,350 for preparation of radioactive flavonoid compounds for studies on the fate and possible role of bioflavonoids in animal metabolism.

Dr. Carl D. Douglass, University of Arkansas, Little Rock, $3,500 for studies on the fate and possible role of bioflavonoids in animal metabolism.

Drs. R. S. Goodhart, B. F. Chow, and S. A. Tauber, The Nutrition Clinics Fund, New York, $2,500 for studies of B_{12} and B_6 metabolism in the aged.

Dr. Eldon G. Hill, University of Minnesota, Austin, $4,500 for study of the role of vitamin E in the nutrition of the baby pig and its possible interrelationship with essential fatty acids.

Dr. M. K. Horwitt, Elgin State Hospital, Elgin, Illinois, $9,000 for study of the tocopherol requirements of man.

Dr. S. H. Hunter, Haskins Laboratories, New York, $6,150 for study of the development of microbiological assay methods for folic group vitamins.

Dr. A. Leonard Luhby, New York Medical College, New York, $6,000 for study of urinary formimino-L-glutamic acid and other amino acid matolites in folic acid deficiency.

Dr. G. W. E. Plaut, New York University-Bellevue Medical Center, New York, $4,000 for study of the mechanism of biosynthesis of B-complex vitamins.

Dr. R. W. Vilter, University of Cincinnati, $10,000 for studies on vitamin B_6 deficiency in human beings.

Dr. M. Wachstein, St. Catherine's Hospital, Brooklyn, N. Y., $5,000 for study of blood and tissue levels of pyridoxal phosphate in pregnancy, the neonatal period, and in abnormal conditions.

Dr. George Wolf, University of Illinois, Urbana, $4,810 for study of metabolism of radioactive vitamin A.

Prednisone Production Patent

U. S. Patent No. 2,776,927 covering production of prednisone and prednisolone by fermentation by action of a Protaminobacter organism, and granted January 8 to Chas. Pfizer & Co. for the invention of Dr. Gilbert M. Shull of Pfizer's biochemical research laboratories, is the first U. S. patent granted for a process to produce these two drugs.

7-Way Infringes 4-Way

Grove Laboratories obtained a federal court injunction restraining Approved Pharmaceutical Corporation of Syracuse, N. Y. from using the name 7-Way Cold Tablets. U. S. District Court Judge Steven W. Brennan ruled in Utica, N. Y. that use of the 7-Way name infringed the trademark 4-Way Cold Tablets which Grove markets via its Baumont Company Division.

Accidental Poisoning Fight

Latest efforts in the fight against accidental poisoning, according to the American Medical Association, include:

Nationwide newspaper advertising campaign emphasizing poison hazards at home by the National Safety Council, the National Advertising Council, and the Proprietary Association.

A meeting in Washington, D. C. of the nation's top experts on poisoning, public health officials, and interested lay authorities to establish a clearinghouse for exchange of vital information from the various poison control centers.

The A.M.A.'s Committee on Toxicology's current work on a model law to require labeling of the many household chemicals that do not list potentially harmful ingredients.

A study of treatment by kerosene, one of the "toughest poisons to counteract." The American Academy of Pediatrics, A.M.A., the American Public Health Association, major medical centers and schools, and medical advisors for the petroleum industry are cooperating.

The recent establishment by the A.M.A. of a permanent subcommittee with the mission of improving public education in chemical poisons.

Narcotine Now Noscapine

Narcotine has been given a new generic name—"noscapine." The new name is approved by the American Medical Association and U.S. Narcotic Commissioner Harry J. Anslinger. The change in name of the cough suppressant is to remove any suggestion that the drug might be addictive.

Greenland TB-Isoniazid Test

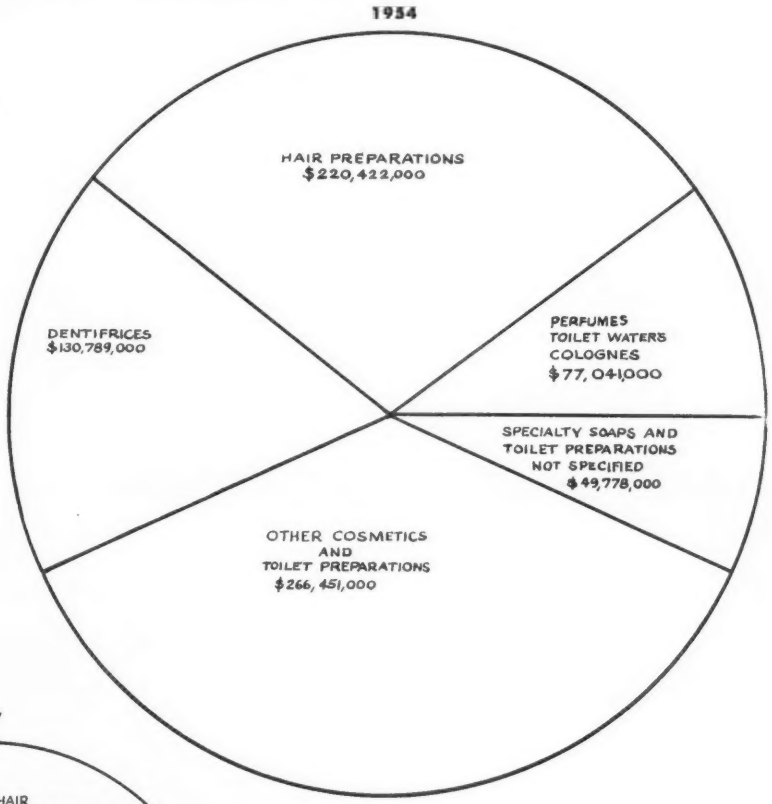
Danish authorities have chosen Greenland for an experiment aimed at wiping out tuberculosis by prophylactic use of isoniazid.

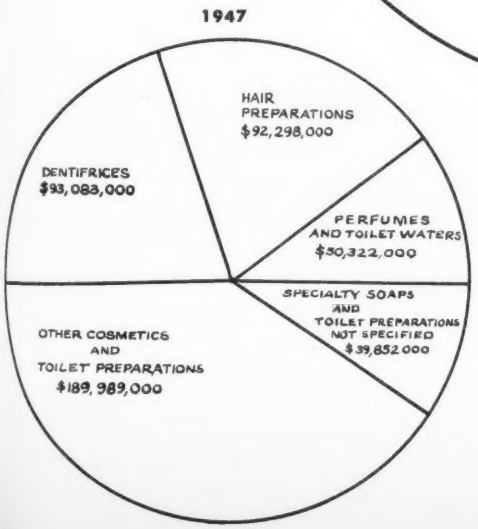
COSMETICS 1954

Toilet Preparations Industry statistics are included in the 1954 Census of Manufactures Advance Report of Miscellaneous Chemical Products. Figures for safety razors and razor blades were obtained from data given for the Cutlery Industry, dry shavers from Electrical Appliances. Dollar values are for total shipments, including interplant transfers, at the manufacturing level and do not bear a constant relationship to retail values.

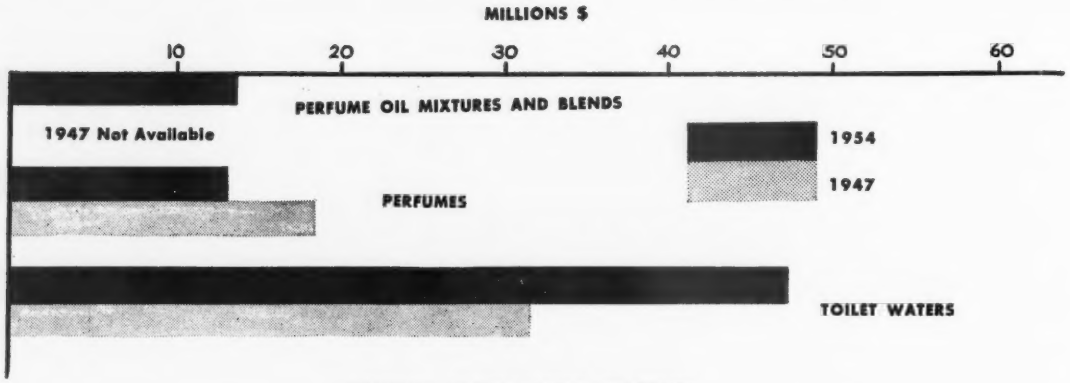
Total toilet preparations for 1954, $744,481,000, an increase of 59.7 per cent over the $465,544,000 reported for 1947, are divided into the major categories of perfumes, toilet waters and colognes; hair preparations; dentifrices; other cosmetics and toilet preparations. Also included in the total are a general catch-all category of toilet preparations, not specified and specialty soaps which include soap base shaving preparations along with mechanics hand soaps and pastes.

Perfumes, toilet waters and colognes accounted for 10.3 per cent of the total in 1954 and 10.8 per cent in 1947; hair preparations increased from 19.8 per cent in 1947 to 29.6 in 1954; dentifrices were 17.6 per cent in 1954 as against 20.0 per cent in 1947; the general cosmetic category was 35.8 per cent in 1954 compared with 40.8 in 1947.—J.K.



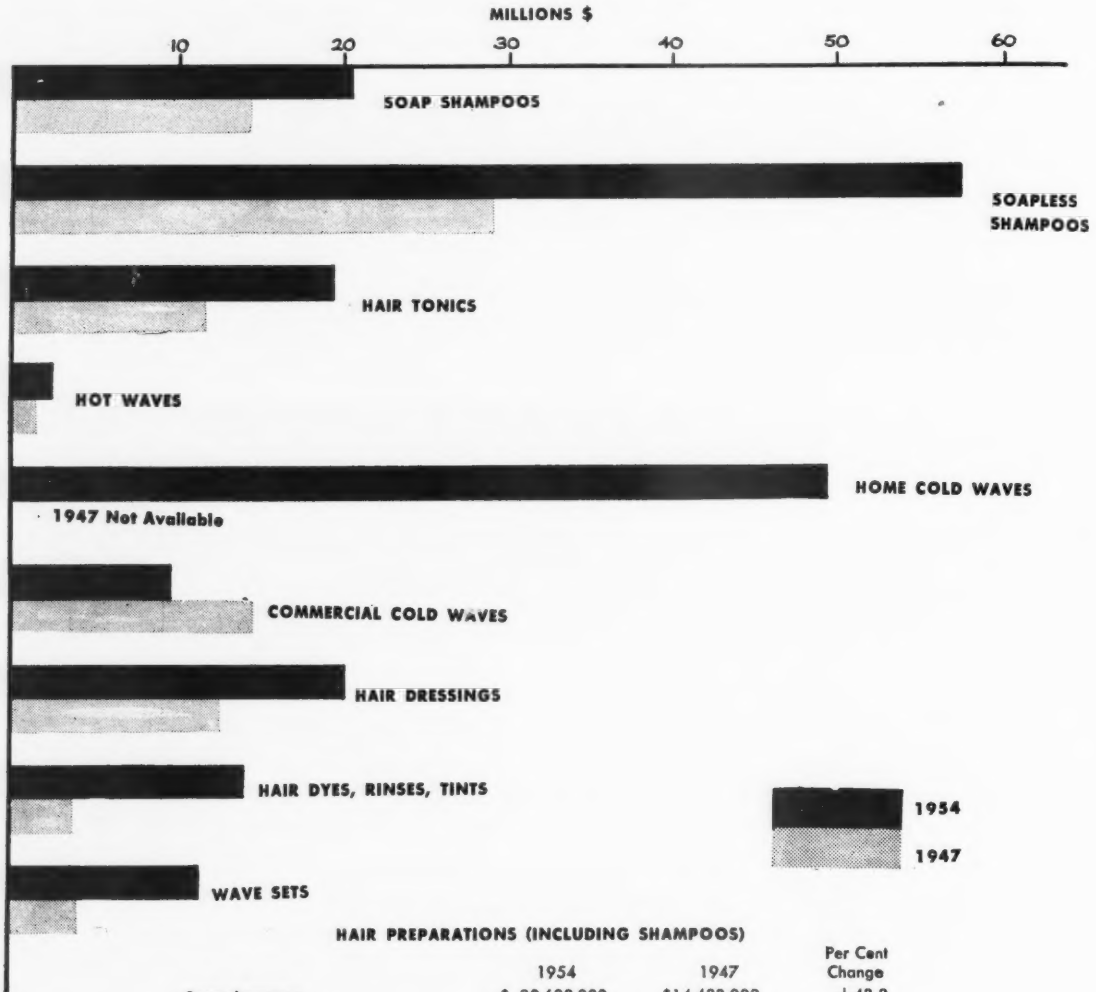


	1954	1947	Per Cent Change
Perfumes, toilet waters, colognes	$ 77,041,000	$ 50,322,000	+53.0
Hair preparations including shampoos)	220,422,000	92,298,000	+138.8
Dentifrices	130,789,000	93,083,000	+40.3
Other cosmetics and toilet preparations	266,451,000	189,989,000	+40.5
Toilet preparations, not specified	6,829,000	13,011,000	—47.5
Specialty soaps	42,949,000	26,841,000	+59.8
Total toilet preparations	$744,481,000	$465,544,000	+59.7



PERFUMES, TOILET WATERS, COLOGNES

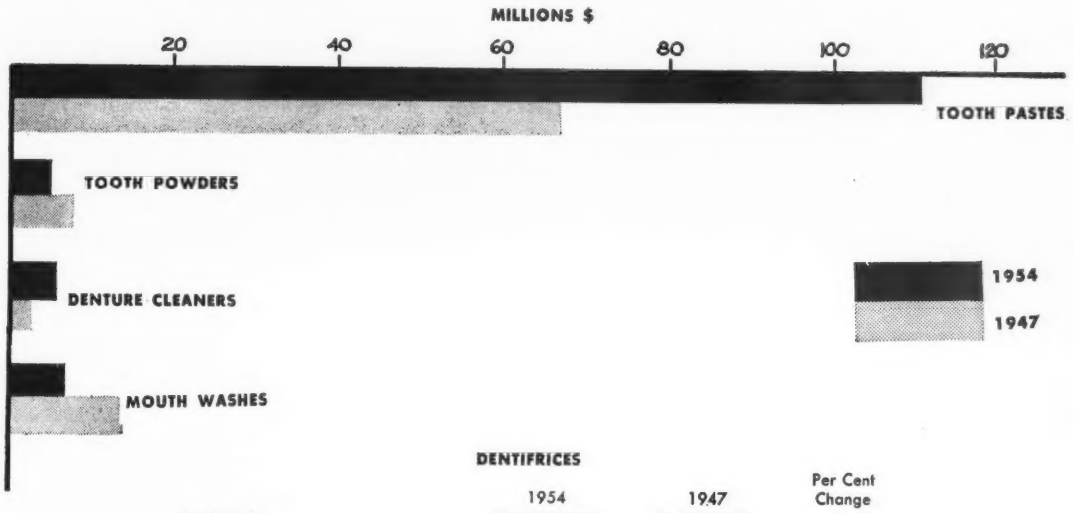
	1954	1947	Per Cent Change
Perfume oil mixtures and blends	$13,764,000	Not Available	
Perfumes—Liquid	11,799,000	$18,429,000	—29.9
Perfumes—Solid	1,312,000		
Toilet and floral waters, colognes—liquid	39,725,000	31,893,000	+48.2
Toilet and floral waters, colognes—solid	7,574,000		
Perfumes, toilet waters, colognes, not specified	2,867,000	Not Available	
Total	$77,041,000	Not Available	



HAIR PREPARATIONS (INCLUDING SHAMPOOS)

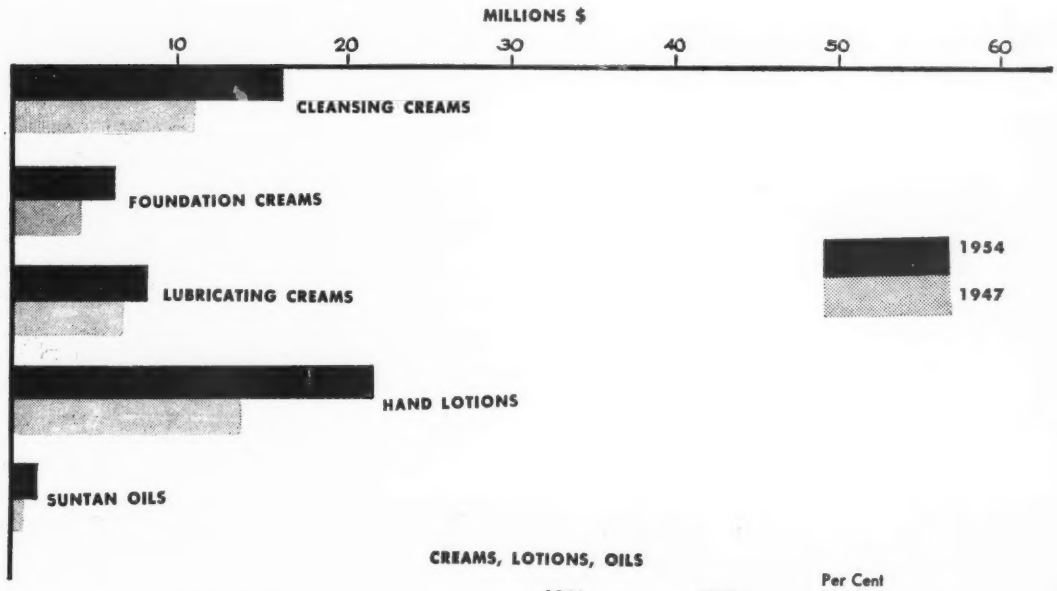
	1954	1947	Per Cent Change
Soap shampoos	$ 20,628,000	$14,423,000	+43.2
Soapless shampoos	57,903,000	29,294,000	+97.5
Hair Tonics	19,632,000	11,851,000	+65.8
Hot wave, machine and machineless	2,667,000	1,435,000	+86.0
Cold wave home kit, complete	14,487,000	Not Available	
Cold wave home kit, refill	35,043,000	Not Available	

Cold wave, commercial	9,845,000	14,823,000	—33.6
Hair dressings	20,342,000	12,764,000	+59.5
Hair dyes, rinses, tints	14,112,000	3,795,000	+272.0
Wave sets	11,563,000	2,013,000	+474.5
Other hair preparations	8,181,000	1,768,000	+363.0
Hair preparations, not specified	6,019,000	132,000	——
Total	$220,422,000	$ $92,298,000	+138.8



DENTIFRICES

	1954	1947	Per Cent Change
Tooth pastes	$110,825,000	$67,085,000	+65.1
Tooth powders	4,854,000	7,954,000	—39.0
Denture cleaners	5,384,000	2,198,000	+145.0
Mouth washes	6,177,000	13,657,000	—54.8
Other dentifrices	2,697,000	2,189,000	+23.1
Dentifrices, not specified	852,000	Not Available	
Total	$130,789,000	$93,083,000	+40.4



CREAMS, LOTIONS, OILS

	1954	1947	Per Cent Change
Cleansing creams	$16,305,000	$11,081,000	+47.2
Foundation creams	6,273,000	4,109,000	+52.8
Lubricating creams	8,138,000	6,637,000	+22.6
Other creams	11,434,000	10,420,000	+9.7
Hand lotions	22,081,000	13,904,000	+59.0
Other lotions	12,135,000	7,661,000	+58.3
Suntan oils	1,561,000	566,000	+175.7
Baby oils	4,548,000	2,954,000	+118.0
Other cosmetic oils	1,886,000		
Total	$84,361,000	$57,332,000	+47.2

(Continued on page 246)

RESEARCH in Direct Mail Advertising

a case study

by Dr. John N. McDonnell
VICE-PRESIDENT FOR ADVERTISING,
SCHERING CORPORATION, BLOOMFIELD, N. J.

The medical profession is the best educated group of consumers. Yet it is the most difficult market for advertising. Despite all that we think we know about doctors, medical advertising is still far from full effectiveness. The same is true to a lesser degree, of promotion to dentists, veterinarians, and pharmacists.

We have much to learn about the doctor. We must know more about his reaction to various media, to our company, to our advertising, and to our products. Believe it or not, we've found that doctors are human. For the most part, physicians respond to all of the basic emotional and persuasive influences of advertising.

Yet physicians are different from the consuming public. They require some modification of the accepted promotional techniques. Just how different they are, and exactly what these techniques may be has not yet been resolved.

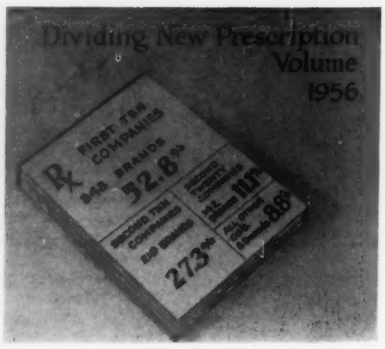
The better and busier the doctor, the harder he is to reach. The physicians are increasingly pressed for time. Growing practices, expanding professional activity, more complex channels of communication and organization serve increasingly to interfere with the gaining and holding of the doctor's attention. Increasing volume of promotional pressure on physicians is leading to more active resistance to promotion.

Let's take a look at this specialized group of "consumers." Doctors are persons whose prescription specification or personal recommendation must be gained to insure that one's product will be prescribed for the ultimate patient-consumer. We cannot easily measure the effectiveness of our promotion, certainly not in terms of direct trade or mail order sales. We can determine results by regional sales studies over periods of time.

These "consumers" total about 238,500 medical doctors and osteopaths. About two-thirds of these are in private practice. Thirty-five per cent are general practitioners, 10.5 per cent part-time specialists, and 30.6 per cent are full-time specialists. The remaining 23.7 per cent of all doctors are in federal service, research, teaching, interneships, residencies, or retired.

Thus, there are roughly 80,000 in general medical

*Presented by Herman W. Leitzow, Schering Vice President for Domestic Sales, at 1956 Marketing Conference, National Industrial Conference Board, New York, Sept. 21, 1956. Survey was conducted by Schering Management Research Department, Mitchell Chadrjian, Manager.



practice, 12,000 prescribing osteopaths, 70,000 specialists, and 24,000 part-time specialists. This is a relatively small group of "consumers" to be the source of more than a billion and a quarter dollars worth of prescription specialty business, not to speak of an almost equal dollar volume of sales of other medical and sick-room supplies.

Pharmaceutical manufacturers have been pouring increasing amounts of dollars into their advertising. Because of the introduction of many new products and supported by expanding sales volumes, the size of promotional budgets has increased. Increasing competition has also brought a demand for increased promotion.

Most advertising executives in the pharmaceutical field are not content merely to add dollars to expenditures. They are becoming more critical. They are more demanding of their dollars and of their promotion. They are devoting more time and effort to creative planning and qualitative research. They seek to develop means for wiser expenditure of moderate but sufficient promotional funds.

Most advertising managers agree that there are several important factors which enter into an effective promotional program and in the marketing of pharmaceutical specialties. These include a careful analysis of the originality and clinical superiority of the product, its research support and professional acceptance, as well as the familiar economic factors of pricing and packaging, distribution, marketing position and record of past sales, and promotional support. Equally important but less often considered is an analysis of the prescriber's preference and habits.

The "medical market" for pharmaceutical prescription specialties is built on physician preference, new products of research, and upon promotion. It has been estimated to reach $1¼ billions at manufacturer's level in 1956.[1] This sales volume represents volume only of those so-called "ethical" pharmaceutical products which are dispensed on physicians' prescriptions in retail and hospital pharmacies, consumed in hospital and clinic practice, or dispensed and used by physicians in their own practice.

There are more than 3,000 companies engaged in the manufacture of pharmaceutical prescription specialties. However, there is a heavy concentration of prescription sales volume in the products of a relatively small number of manufacturing houses. For instance, a recent survey[2] has shown that in the first quarter of 1956 slightly more than one-half of all new prescriptions written by physicians were for 343 products of the ten leading companies. Specialties marketed by the next ten companies include 219 additional brands and brought the total to 80.1 per cent of all new prescriptions. The top 40 companies with their total of 704 products accounted for better than 91 per cent of all new prescriptions written by doctors in the entire country. This has been confirmed repeatedly.[3]

This economic importance of research and new products in the medical market is also shown by another continuing survey[4] of the 194 companies which have introduced new prescription specialties over an eight year period from 1948 to 1955. It was shown that 124 of the houses added 403 new products to their line in 1955 alone.

It was this impact of new products, increased competition, and the difficulty of gaining and holding the physician's attention that has caused big and little pharmaceutical manufacturers to materially increase their promotional efforts. In 1956, they devoted more than $200 millions to the three principal methods of advertising "ethical" pharmaceutical products. This does not include advertising of "proprietary" or consumer drugs, cosmetics or chemicals.

Of this "professional promotion," about 60 per cent went into "detailing." More than one-quarter of it went to direct mail, and about ten per cent to medical journal advertising. This represents nearly three times as much for direct mail and journal advertising as was expended in 1950.

The most effective form of promotion in the medical market is the "detailman." He is sometimes called "medical service representative" or "professional service representative." The detailman is not a "salesman." He is a college bred, highly trained individual. He calls upon the doctor, visits hospitals and pharmacies. In the doctor's office, he devotes most of his time and effort to presenting to the physician information about the merits of his products. He hopes to convince the doctor to prescribe these preparations, rather than to make an actual sale. Many pharma-

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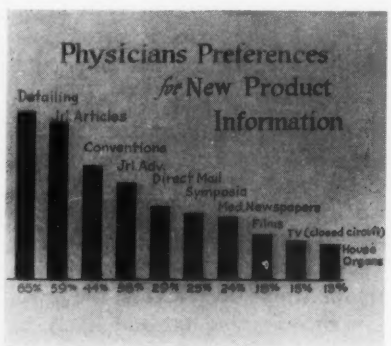

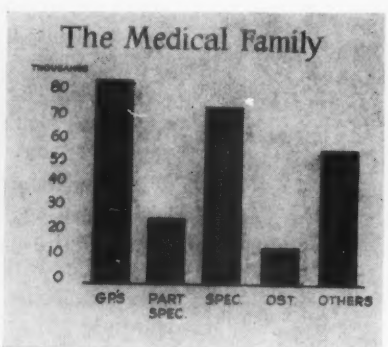

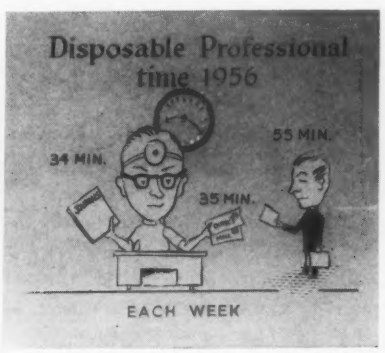

Cosmetic Waxes

by Harry Hilfer

Waxes have always been one of the most necessary components of cosmetic materials and are no less important now. During the past twenty years, however, there has been a gradual supplementation by synthetic waxes, instead of a complete dependency on natural waxes for cosmetic formulation. In some cases these new materials may be used for functions which the natural waxes could not fulfill, but I think their primary use is as a method of enhancing the functions of the natural waxes. In theory, at least, it is possible to synthesize a compound into which all desired qualifications may be incorporated, but in most cases this is not commercially feasible, since the cost may be too high. We must, therefore, be content with those that most nearly approach it, and by using several types in conjunction with each other some method of success may be achieved.

In the discussion which follows the scope will go outside the classic definition of a wax—that is—the ester of a higher alcohol and a higher fatty acid, but will include, as well, other types of compounds which have the appearance and the attributes of waxes. Included for example will be amidic compounds as well as some products which may be regarded as polyols.

Beeswax is, perhaps, the wax which is used to the greatest extent in cosmetic formulations. The old common cold cream and its more modern derivatives are all offshoots of the beeswax—borax emulsion. Beeswax consists of an ester of palmitic acid and a mixture of higher alcohols a hydrocarbon, some free alcohols and a free fatty acid—cerotic acid. Its ability to form emulsions is derived from the ability of cerotic acid to react with Borax to foam a soap, which in turn acts as an emulsifier. The emulsion thus formed is further stabilized by the other constituents of the beeswax, chiefly the free alcohols. Cerotic acid by itself does not produce the same results when used with hydrocarbons, the beeswax may be, therefore, thought of as being unique is possessing a built in emulsification system.

The emulsions formed contain a relatively small amount of water, usually not over 35 per cent and by governing the conditions, either water-in-oil or oil-in-water, emulsions may be formed. The principal condition is the water concentration. In general systems containing less than 25 per cent of water, are water-in-oil and over 25 per cent are oil-in-water. Other variables are the amount of borax added, the water-in-oil emulsions usually containing less borax. Beeswax is also used in conjunction with both oil-in-water and water-in-oil emulsifiers in the formulation of liquid emulsions, such as hand lotions, hair lotions and other varied systems.

Beeswax is also used in non-aqueous systems, best examplified by lipsticks where its function is simply to form a thixotropic system with the oils it is used in conjunction with. Since it has a somewhat amorphous character, being somewhat microcrystalline, the products into which it is incorporated are not likely to

COURTESY CHARLES OF THE RITZ

break because of excessive brittleness.

Carnauba wax, has the highest melting point of any of the natural waxes. Its great insolubility in water and its surface hardness is utilized in furniture and floor polishes and shoe polishes. Its cosmetic applications are more limited, being used principally in lipsticks. Its incorporation, even in small concentrations in a lipstick base, raises the apparent melting point of the stick more than any other material that I know of. It, therefore, is capable of producing sticks which have more liquid films after application than would be possible in vehicles having the same apparent melting point but containing no carnauba wax. During the past few years the price has gone up steadily because of a scarcity of the wax on the market, which has caused some formulators to seek a substitute. Though as far as I know, this has not been accomplished, there has been an increase in the amount of candellilla wax used in lipsticks.

Candellilla does not have the high melting point associated with carnauba wax, but it is high enough to make its use possible, even if somewhat more of it must be used to obtain the same effect that is possible with Carnauba wax. It is capable, in addition, of causing the stick's surface to appear almost mirrorlike after flaming. The two waxes bear little resemblance to each other chemically, since the carnauba wax is primarily an ester of alcohols and fatty acids having an average of perhaps thirty carbon atoms, while candellilla wax is predominently a hydrocarbon. In many cases the two are used to supplement each other —the carnauba wax to supply the high apparent melting point and the candellilla wax the highly desirable mirrorlike surface sheen.

Spermaceti is a highly crystalline, but relatively low melting point wax. It consists of primarily cetyl myristate found along with a liquid wax in the head cavity of the sperm whale. Its primary cosmetic use is in creams because of the smoothness its presence imparts to the films and it is also used in lipsticks for the same reason. From spermacetic comes cetyl alcohol, which is used to a greater extent because of the hydrophilic properties the free hydroxy group endows it with. More recently much of the cetyl alcoho lappearing on the market has been synthetic and, therefore, cheaper than if derived from spermacetic by hydrolysis. Stearyl alcohol has also been produced and is now part of the regular list of raw materials available to the formulator. Both are used as auxiliary emulsifiers, but aside from this primary reason for their use, they both impart a desirable unctiousness to the applied film.

Lanolin—from the technical definition of waxes should also be classified as a wax. I regard it, however, as being in its own special category and, therefore, outside the scope of this article.

Synthetic waxes have come very much to the fore recently because of some of the newer functions they may impart. The ethanolamides of the fatty acids

(Continued on page 258)

Pharmaceutical PERFUMING

by Edward P. Morrish
TECHNICAL DIRECTOR, FIRMENICH, INCORPORATED

The importance of a pleasant perfume in a pharmaceutical product cannot be overestimated. Patients are most critical of odors of pharmaceutical products, and the first thing a patient does is to smell that preparation. If the odor is pleasing, the patient will more readily use the product. This is also the special problem in flavoring pharmaceutical products. There are many considerations in choosing a perfume fragrance for a pharmaceutical product.

Universality of the perfume is most important because it must be recognized that the pharmaceutical product may possibly be used by all classes of people including men and women, old and young, boys and girls, and children. Therefore, pharmaceutical perfumes cannot be adult, masculine, feminine, exotic, nor must they be types that are repugnant to certain classes of people.

Acceptability is the second great classification. The perfume must not only be universal in type, but it must be pleasing, mild, and not overpowering. It should adequately blend in with, and mildly cover the odor of the pharmaceutical ingredients. In cases where there is an unpleasant chemical odor, a perfume must be selected that covers and does not accentuate the unpleasant odor. Some ointments perfumed with aromatic ingredients that are not alkali stable may chemically shift from a rose odor to a garlic-like note.

The concern for irritation and the assurance of dermatological safety is of most pertinent importance for pharmaceutical preparations, since pharmaceutical preparations often may be used on diseased or injured skin. It is necessary to select perfumes that will not induce irritation, or aggravate already irritated skin conditions. Therefore, perfumes must be chosen that have been previously dermatologically tested to eliminate primary irritants, and to indicate their low threshold of dermal response.

It is additionally important to concern one's self with using a perfume that will not be a sensitizer. This is extremely important in dermatological preparations, or in ointments or lotions that may be used over long periods of time. The pharmaceutical development man must, therefore, be concerned about the allergenic properties of a perfume, and select those that have been proven by dermatological research to have low thresholds or indices of dermal reactivity.

Perfume compatibility is an inherent risk both chemically and physically when introduced into the pharmaceutical product for which it is intended. Incompatibility can manifest itself chemically by discoloration, or develop a uniquely different odor most often unpleasant. Additionally, there may be some disruption of emulsion stability which makes unstable products.

Perfuming a pharmaceutical product is a problem with special difficulties: original odor potency can, upon aging, drop rapidly and may, in some cases, completely disappear. Perfumes of high aldehydic content may fade quickly due to the inherent ability of

hydrogenated fats to absorb and couple aldehydes. This tends to change the fragrance both as to its character and intensity.

Perfumes are highly susceptible to the influence of the packaging. Everyone is acquainted with the unique problem of packaging cosmetics and pharmaceuticals in polyethylene containers. Here, a perfume can fade away in less than two months, and if the package is continually exposed to air passing over the container, the perfume can be extracted much faster. Shampoos in polyethylene bottles, especially the medicated types, have great difficulty in retaining perfume potentials. In this packaging material, external phases of oil in the emulsion produce swelling and collapse of these containers. Where more than three per cent of an essential oil is used, you can experience an evaporation container collapse.

Perfuming powders, which may be dusting, foot, or other medicated powders, when packed in paper containers rapidly lose their fragrance through the package walls. Here, the perfumer may make a broad use of Shiff bases, or use powdered perfumes incorporating the aromatic constituents in gums. This protects the fragrance from evaporation, and sometimes keeps the specific action of some of the chemical constituents in the powder compositions from destroying the perfume. In any event, perfume for a powder pharmaceutical should retain its original degree of fragrance throughout the entire life of the product.

FLOWER ODORS LIKED BEST

1.	Rose	6.	Lavender
2.	Lilac	7.	Heliotrope
3.	Violet	8.	Honey
4.	Lily of the Valley	9.	Jasmin
5.	Carnation		

ODORS LIKED BY MEN

1.	Lilac	6.	Lavender
2.	Rose	7.	Heliotrope
3.	Violet	8.	Honey
4.	Lily of the Valley	9.	Jasmin
5.	Carnation		

ODORS LIKED BY WOMEN

1.	Lily of the Valley	6.	Lavender
2.	Rose	7.	Jasmin
3.	Lilac	8.	Heliotrope
4.	Violet	9.	Honey
5.	Carnation		

AGE GROUP LIKES

	Under 25	25-45	*Over* 45
1.	Lilac	Rose	Violet
2.	Rose	Lilac	Rose
3.	Lily of Valley	Lily of Valley	Lilac
4.	Violet	Violet	Carnation
5.	Carnation	Carnation	Lily of Valley
6.	Lavender	Lavender	Honey
7.	Heliotrope	Jasmin	Heliotrope
8.	Honey	Heliotrope	Jasmin
9.	Jasmin	Honey	Lavender

It is most difficult to discuss the entire scope of pharmaceutical perfuming. It is a lifetime study. But we shall touch upon a few of the perfume problems that may more easily acquaint you with the fact that there is a good reason for a perfume chemist to ask you a lot of questions about the product he is helping you perfume. I use the expression "perfume chemist" rather than perfumer, because your field of perfume has become most complex.

For years, and routinely, the general scope of perfuming pharmaceuticals falls into what might be called floral fragrances for pharmaceutical perfuming. Again we can only touch upon a few of these groups.

It might be interesting, at this point, to cover the subject of odors best liked in the United States. This was a national, statistical study compiled from many sources.

Rose is the floral fragrance most frequently used in perfuming pharmaceuticals, and it has a load of solid virtues, usually because it is free of components that frequently cause sensitization or primary irritation. It is interesting to note, however, that one of the rose family, "Primula," is one of the good dermatological skin sensitizers. The rose alcohols are quite stable in alkali medias, in creams, soaps, and even depilatories. It seems that many of the newer pharmaceutical emulsions fall into the alkali classifications.

Jasmins are powerful fragrances to overcome difficult-to-cover odor notes—one of the problems characteristic in the pharmaceutical industry. They are not likely to irritate the skin unless they contain large quantities of alpha amyl cinnamic aldehyde. Jasmins do have, because of their frequent inclusion of indole in the formula, a problem of discoloration. Where methyl anthranilate is included in their composition, exposure to sunlight intensifies the discoloration.

Orange blossom perfumes are widely used in pharmaceutical preparations. Here again, the

(*Continued on page 258*)

Gas Chromatography*

by Nathaniel Brenner
APPLICATIONS ENGINEER,
THE PERKIN-ELMER CORPORATION.

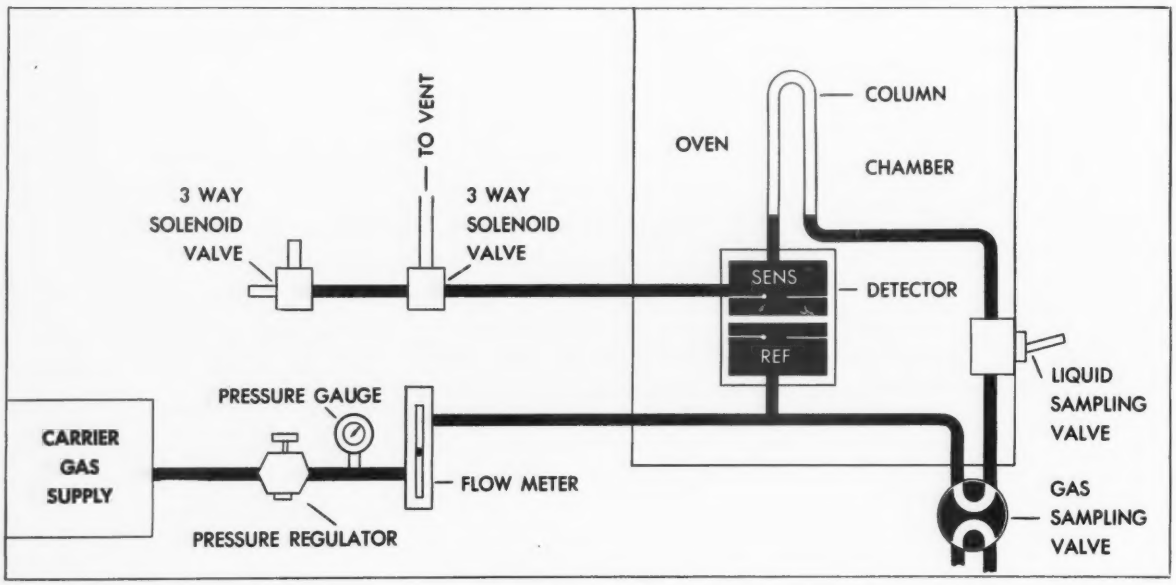

FIG. 1

In recent years chromatography has taken its place as one of the standard analytical tools for investigation of complex mixtures. It is surprising that this old technique had not become popular sooner, since it is one of the few methods for the actual physical separation of a complex mixture into its components. Distillation, crystallization, solvent extraction, and electrophoresis are in this class. Most analytical methods, such as spot tests or derivative preparation, do not achieve a physical separation of the sample components in their original state. Further, chromatography has the advantage of providing, in most cases, a quantitative separation. As you know, with crystallization or solvent extraction, one can never obtain a complete separation since the final discarded solvent always contains a saturated solution of our desired component. In distillation, the problem of azeotropes is a difficulty to be reckoned with in the accomplishment of pure and complete separations.

Both gas and liquid chromatography depend upon the same fundamental principles, which is that the passage of a mixture of components through a column, packed with a suitable adsorption or partition material, will result in a separation of the components by virtue of their differing affinities for the column substrate. By impelling a sample stream through the column by means of gravity or solvent action, we will find that the compounds having the weakest affinity for the substrate will appear at the column exit in advance of those compounds having a greater affinity for the substrate.

Gas chromatography differs from liquid chromatography only in that samples are introduced to the column in the vapor phase and are impelled through the column by means of a suitable gas, called the carrier gas.

A schematic flow diagram of a representative instrument is shown in Figure 1. Carrier gas is supplied to the system from an external gas cylinder equipped with a pressure regulator. Helium is normally used because of its high thermalconductivity and inertness. Nitrogen or dry air may be used where high sensitivity is not required.

The carrier gas flows through a second pressure regulator to the reference side of the thermalconductivity detector and from there to the sample injection systems. Two such systems are provided. One, a precision gas sampling valve, and the other, a liquid sampling device where samples are injected into the system by means of a hypodermic syringe. The sample is then carried into the column where the separation of components occurs. As each component arrives at the column exit, it flows through the sensing side of the thermalconductivity detector. The difference in thermalconductivity between the sensing and reference sides, which are part of a bridge circuit, produces an

*From the Proceedings of the Scientific Section of the Toilet Goods Association, No. 26, December 1956.

unbalanced voltage which is measured by a standard recorder. The time required after injection for a given component to appear at the column exit is called retention time. By maintaining a constant flow rate, the retention time for a given component can be exactly reproduced on the recording paper. After the detector, the flow passes through a three-way valve which in one position allows collection of each component, if desired, and in the other position provides measurement by a flow meter. With slow flow rates used (30-200 cc./min.) infrequent renewal of the carrier gas cylinder is required.

The precision gas sampling valve is mounted on the left-hand side of the cabinet. Access to the column and detector chamber, which incorporates an air bath temperature controlled oven, is provided through a door on the left front. To the right front of the instrument are located all operating controls. At the top is the temperature control system (20-225° C.), in the center the flowmeter, and the lower controls compromise the pressure regulator and gage, detector voltage control and voltmeter, recorder zero control, and precision stepwise recorder range control. This control provides range adjustment in steps of ½ from 1 to 1/5.2. The recorder shown here is a Leads and Northrup Speedomax strip chart recorder, 0-5 mv, with one second full scale response.

An illustrative fractogram of a familiar solvent mixture is shown in Figure 2. Note that the sample size is only 10 microliters. The qualitative identification of these components could have been made by running small samples of the pure materials under the same operating conditions as those used in this run. Or, each fraction could have been collected after it had passed through the thermal conductivity cell and analyzed by some other method.

Quantitative analysis by gas chromatography is based on the fact that the area under a band is proportional to the concentration of that component present. Since the thermal conductivities of all organic compounds except for the light gases are quite close (as compared with that of the helium carrier), the area response of each component in a mixture of organic liquids should be proportional to the mol concentration of that material in the sample mix. This has not been found too reliable in actual practice so that most analysts resort to the use of standard mixtures to determine the area-concentration ratio for the components in a mixture before attempting a quantitative analysis of an unknown mix.

Of what interest is an instrument and technique of this type to the cosmetic chemist? There are four general application classifications in which this instrument can be advantageously used. The first is the obvious one of quantitative analysis. A binary mixture of two well-known materials has been analyzed by the traditional area-ratio method. By measurement of the height of the peak and multiplying this by

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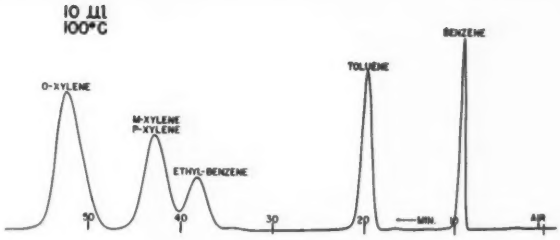


FIG. 2

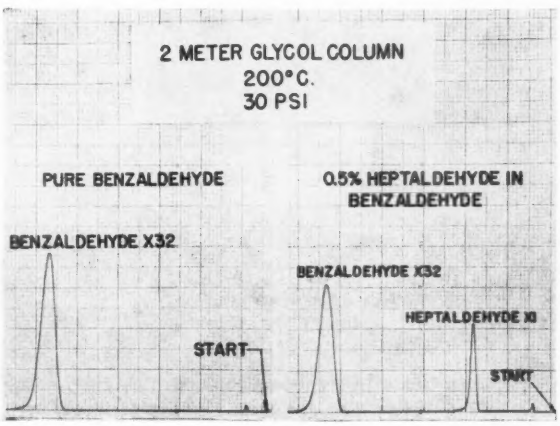


FIG. 3

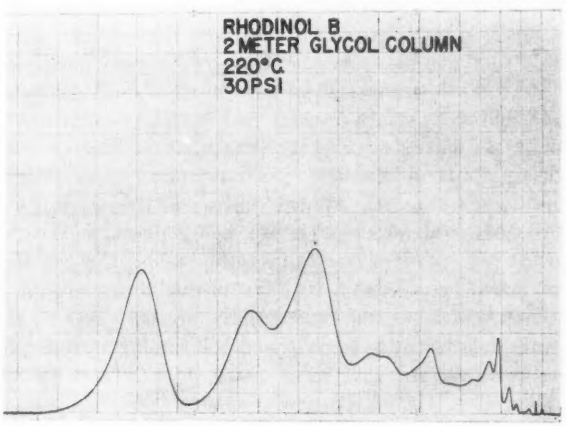
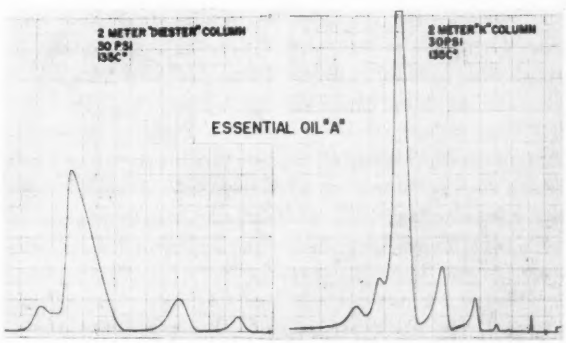


FIG. 4

FIG. 5



Ernest Shiftan, *chairman of the board of the American Society of Perfumers, Inc., and vice president of van Ameringen-Haebler, Inc., recently appeared as a guest speaker before the Second International Symposium of Synthetic and Natural Perfumes and Cosmetology, at the Palais de Congress, Porte de Versailles, Paris France. The world-wide meeting at Paris was attended by the technical leaders in the field of beauty products and fragrance from all over the world, who met to discuss the scientific phases of the cosmetic and perfume industry.*

Chemical Research

One of the oldest and most natural aspirations of any perfumer is to duplicate nature by imitating the beautiful fragrances of flowers in their living state. Only since chemical research has lifted the mystery of nature by revealing to us a number of the fragrance compounds occurring in nature, and since it has been able to synthesize new chemicals resembling portions of natural flower odors, have we been able to achieve our goal to a certain degree. As long as we cannot extract the living odor of the flower, perfect and unchanged, then analyze it by factual, analytical methods, we cannot duplicate nature with true fidelity. But, with advances currently being made with the latest research in extraction methods, and the newest analytical procedures, such as infra-red spectrophotometry and gas chromatography, we can hope that some day we may learn the precise compositions of natural fragrances.

Through the discovery of many new aromatic chemicals, which are not found in nature, the modern perfumer has found great opportunity to develop perfume notes through his own imagination.

Besides the discovery of these new aromatic notes, the synthesis of natural aromatic chemicals in a very pure form also gives the perfumer an opportunity to emphasize certain notes without the disturbance of natural by-odors, which the same product would have if it were isolated from the natural product. As an example, with aldehyde C-10 we can achieve entirely different effects than if we were to isolate the same aldehyde from orange oil. The same is true in the use of real jasmone, which gives the perfumer an entirely different effect than if he used the finest jasmin absolute.

The third great achievement through chemical research is the ability to manufacture unlimited quantities of perfume raw materials, allowing us to make endless amounts of perfumes and perfume products suited to the different needs and tastes of the various peoples of the world.

It is now an established fact that man has increased the available quantity of materials to an almost limitless amount. If the perfumer had to use only natural materials, his productivity would shrink to about five per cent of his output. For that reason, the enjoyment of fragrance, which was originally a luxury, is attainable today in all walks of life. Moreover, because of chemical research, the perfumes available to all today are far superior to those once enjoyed only by the wealthy and titled.

Interwoven with these three fundamental consequences of chemical research in perfumery, are several other important new gains in our industry. First, there is the advantage of perfume oil compounds made with a high percentage of pure synthetic materials, which have a more constant physical, chemical and olfactory uniformity than those made with essential oils, natural extractions, and other organic materials that are subject to the vagaries of nature.

Second, compounds made with a high percentage of synthetic materials can be made more stable because chemical interchanges, such as those causing discoloration, oxidation, and a tendency toward acidity among the components, can be more easily anticipated as their chemical and physical characteristics are well-known.

Third, the compounds consisting mostly of synthetic material can be tailored for specific uses, as, for instance, to perfume soaps, cosmetics, deodorants, as as well as in the industrial uses in rubber, plastics, paints, etc. and other functional preparations, because any adverse reactions of the perfume oil with the

products in which they are incorporated can be determined before-hand and eliminated. For every known component of a natural product, there are at least as many unknown and unpredictable components which influence the effect of the perfume on a basic product, and we can only conduct shelf tests for limited periods of time to determine their influence. While some parts of a natural product may remain unknown, and, therefore, unpredictable, we must turn to synthetics for dependability.

Another important consideration is cost and price stability. Natural products, which are subject to such unforeseeable and irresistible influences as the weather, world politics and labor troubles, can undergo price fluctuations far greater than any faced by synthetic materials. If we take the case of such bodies as linalool, and geraniol, we readily see that the purely

and Perfumes

by Ernest Shiftan VICE PRESIDENT VAN AMERINGEN-HAEBLER INC.

synthetic production of these products will favorably compete in price and quality with the products isolated from natural plants. We have materials like the ethylene oxides, many new acids, esters, ketones, etc., and more recently, the acetylenic compounds, vinyl compounds, and many others that are becoming readily available.

There are, of course, many reasons for the steady price reduction of aromatic chemicals in the past decade, either new processes have been found which give better yields, or new raw materials have been developed by the chemical industry, which have made available tank car quantities of materials which were laboratory curiosities only a few years ago. If we take the example of phenylethyl alcohol, (one of the most important ingredients of perfumes) we know that it was first made in the laboratory by the chemical reduction of phenylacetaldehyde, which, in turn, had to be made by a complicated synthesis. The first practical method of synthesizing phenyl ethyl alcohol was by the reduction of esters of phenyl acetic acid. This involved quite a few steps.

A radical change in phenyl ethyl alcohol production came with the substitution of the Grignard reaction. This reaction, which employed ethyl ether, was a popular laboratory procedure, but was not carried out commercially on any projects, either inside or outside of the aromatic chemical industry. Again, hazardous reactions, poor yield, and a contaminated final product made the process unattractive, but it still was better than the previous chemical reduction.

The present manufacture of phenyl ethyl alcohol is by the Friedel-Crafts reaction. It is necessary only to mix a solution of ethylene oxide in benzol with a suspension of anhydrous aluminum chloride in more benzol to get an excellent yield of fair quality phenyl ethyl alcohol, which can be made suitable for perfumery purposes by relatively simple processes. With the advent of this new process about twenty years ago, phenyl ethyl alcohol became available at a much lower price . . . and has been made in increasingly larger quantities. The extreme simplicity of this method has made further research on better methods of manufacture for phenyl ethyl alcohol less attractive.

Now, how does the use of all these new chemicals affect the perfumer? He is certainly most grateful to the chemist for the abundance of raw materials, which not only aid in solving of old problems in the duplication of delicate scents of nature—but which as well, open entirely new vistas of creation for increasing and improving the fragrance notes and colors on the pallet of the creative perfume artist. As the basic fragrance in one perfume or the harmonic note in another, a new aromatic body represents a new freedom, a new range of fragrances with almost infinite potentialities. This, of course, is what the creative perfumer waits for, and chemical research revitalizes the potentialities of the perfumer's creativity through constant exploration of new aromatic possibilities. If a perfumer is dealing with a very strong product, which is always most valuable for his work, he might have trouble recognizing its value immediately. Strong notes give their particular effect only in certain mixtures with other aromatic products. Therefore, not only does the perfumer have to have inspiration and imagination as to what mixture to make but, most of the time, he must conduct many experiments to bring out an accord in which the new product shows up a strong pleasant and, most important, original note.

In the past fifty years, it is perhaps safe to estimate that as many as twenty thousand compounds have

(*Continued on page 264*)

Zirconium Oxychloride ANTIPERSPIRANT*

by E. G. Helton, E. W. Daley and J. C. Ervin

TOILET GOODS DIVISION,
THE PROCTER & GAMBLE COMPANY, CINCINNATI, OHIO

FIG. 1

The use of some zirconium salts as antiperspirant materials has been proposed[1] and at least one has attained rather wide acceptance for this purpose. However, so far as these investigators are aware there has been no suggestion that zirconium oxychloride may be used as an antiperspirant or as an antiperspirant ingredient.

The studies that revealed the efficacy of zirconium oxychloride had as their objective the development of an active ingredient which combined the greatest possible antiperspirant effectiveness with a high degree of safety to the skin and fabrics. While methods for the determination of the effect of antiperspirant materials on fabrics are quite standardized and well-known[2], and irritation and toxicological studies of any cosmetic usually proceed in a straight-forward fashion, test methods for the determination of antiperspirant effect are less well defined. From time to time, a variety of procedures has been proposed, of both *in vitro* and *in vivo* nature. *In vitro* tests have included albumen precipitation methods[3], and the measurement of ion transfer through treated membranes[4]. *In vivo* methods, hopefully more meaningful in end results, have been aimed, for the most part, at the actual measurement of perspiration output[5,6,7]. Since the area of most concern, the axilla, is a difficult one in which to work, such other regions as the back and forearm have been used by various investigators. It is not our purpose to discuss all *in vivo* methods in detail, but a general statement can be made which covers all of them. Once a procedure has been worked out which will give a good quantitative measure of the sensible perspiration produced over a given area, the investigator finds that individual sweat patterns vary greatly from one subject to the next, and furthermore, that the response of subjects to a given antiperspirant material varies considerably. It has often been found that a substance which will produce a good effect on one person is not measureably effective on the next. Thus, the investigator employing the usual small test panel must approach generalized conclusions cautiously.

In this work with zirconium oxychloride, two *in vivo* methods for the determination of efficacy have been used. The first, in which areas on the subjects' backs are treated, is the easier to conduct, and has been of great value in screening and preliminary work. However, the second technique, involving direct measurement in the axillae, is, of course, of greater significance. In the back test, a number of areas about one-and-one-half inches in diameter are treated with the materials under study. After the desired waiting period, usually several hours, an indicating cream containing phenolphthalein is applied to the treated region and adjacent areas. When the subjects are exposed to an environment of heat and high humidity to induce sweating, the droplets of sweat turn the cream dark red, producing a pattern like that in Figure 1. Each dark spot represents a sweat droplet, and the treated areas are clearly evident because of the reduction of sweating in the areas. Comparison of the number of drops in a treated area with the number in an adjacent untreated area gives a reasonable estimate of the degree of antiperspirant effect obtained.

Our second test method has been carried out by a

*From Proceedings of the Scientific Section of the Toilet Goods Association, No. 26, December 1956.

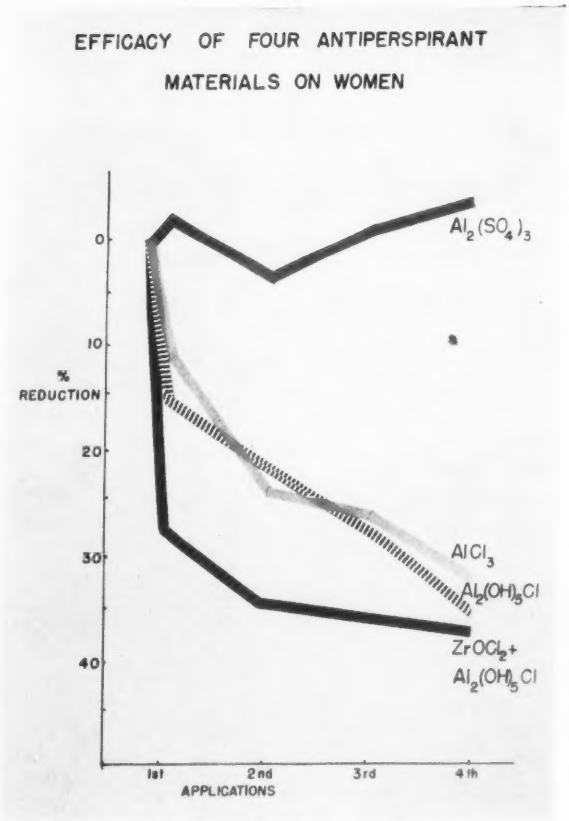
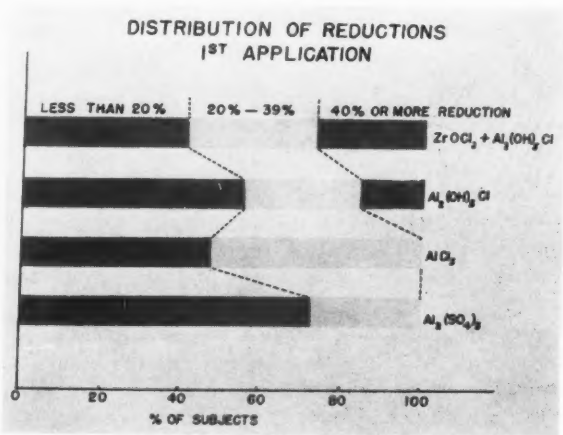


FIG. 2

modification of the method of Fredell and Read[8]. This procedure uses a gravimetric measure of the amount of perspiration produced in the axillae to determine antiperspirant effect. Sweating is induced by either exposing the subjects to heat and high humidity or through vigorous exercise. After the sweat-induction period, tared Webril pads are placed under each arm for a given period, usually ten minutes. These pads are weighed after the sweating period, and the mount of perspiration produced determined.

While the amounts of perspiration producedin the left and right axillae of a subject are usually not the same, published work indicates that a given subject will have a reasonably consistent ratio of output between the two[9]. Our work supports this conclusion. A normal ratio for a subject is established by making four or five control runs before any treatment is applied. If an effective antiperspirant is then applied to one arm, the normal ratio is significantly altered.

FIG. 3



The reduction in sweating produced by an antiperspirant can be obtained by fitting the results from this method into the formula:

$$\text{per cent reduction} = 100 - \frac{\text{antiperspirant test ratio}}{\text{average untreated ratio}} \times 100$$

All of our early work used the back test for measurement of efficacy. A large number of organic and inorganic compounds were screened for activity. This work showed zirconium oxychloride to be a material of great promise from the standpoint of efficacy when compared with the more common aluminum salts, even though it involved an acidity problem more severe than that associated with such compounds. Eventually, through the use of organic buffers, a solution to the acidity problem was found which rendered zirconium oxychloride safe toward the skin and fabrics without the loss of its superior antiperspirant characteristics. Our current practice is to use a blend of zirconium oxychloride and aluminum chlorhydroxide in approximately equal amounts, buffered as mentioned above. Tests on the backs of human subjects indicate that this combination is equal in effectiveness to a straight solution of zirconium oxychloride.

This combination was then tested in the axillae and compared with solutions of accepted antiperspirants. The solutions were applied by means of a saturated cotton swab. After a one-hour waiting period, the subjects were exposed to induce sweating. The sweat induction period before collection of samples was also one hour. Twenty-seven female subjects were used in this study and four control values were determined for each subject before any test materials were applied. Control values were also determined on the first day of each week in which the subject was treated. During each week of treatment, the subjects received four successive daily applications of the material to be tested. The materials were:

1. A buffered solution of aluminum chloride at pH 3.3
2. A solution of aluminum sulfate at pH 1.9
3. A solution of aluminum chlorhydroxide at pH 4.5
4. A buffered solution of zirconium oxychloride and aluminum chlorhydroxide in approximately equal proportions at pH 4.0

Figure 2 shows the average effect of each of these materials at each of the four applications. It may be seen that three of the four solutions tested exhibited some antiperspirant effect on the panel as a whole. The fourth, aluminum sulfate, exhibited no significant average effect although a few individuals responded to it quite well. This tends to support the findings of Brun and Manuila[10] although it contradicts our own earlier studies on the backs of males. On these sub-

jects, the buffered zirconium oxychloride-aluminum chlorhydroxide solution had a considerably better average effect at the first application than did the others. This advantage was maintained through the second and third applications. It was only at the fourth application that the solutions of aluminum chloride and aluminum chlorhydroxide were able to show essentially the same effect.

The next four figures (3, 4, 5, 6) show the general distribution of efficacy values among the subjects. One can easily see the wide latitude of response to these materials among the individuals on the panel. It will be noticed that with the buffered zirconium oxychloride-aluminum chlorhydroxide solution there were fewer subjects showing less than 20 per cent reduction in perspiration, and more showing over 40 per cent reduction than was the case with any of the other materials.

Two smaller tests were made using men as subjects. The only material used in these instances was the buffered zirconium oxychloride-aluminum chlorhydroxide solution, and the results tend to confirm those obtained in the previous test with women. With five male subjects, an average reduction of 32 per cent was obtained the first day, and 57 per cent the second day. With seven subjects, the first day showed an average inhibition of perspiration of 37 per cent, the second day 39 per cent, and the third day 48 per cent.

The results of these tests indicate that a positive antiperspirant effect has been achieved with the solution and cream described. When suitable statistical methods are applied, the reductions in perspiration are found to be significant at the 95 per cent confidence level. Throughout our work with zirconium oxychloride we have noted that this material, either used by itself or in suitable combination with aluminum chlorhydroxide, is quite consistent in its effect; that is, with its use among a representative group of subjects there are generally fewer subjects with no observable effect than when any of the aluminum salts are used as the treating agent. In the tests just described, this effect can be seen in the distribution of effectiveness values among subjects, where fewer showed less than 20 per cent reduction in perspiration when treated with the buffered zirconium oxychloride-aluminum chlorhydroxide combination than when treated with aluminum salts alone.

Turning now to the toxicity, or conversely, the safety of zirconium oxychloride and preparations containing this compound, there are several references in the literature which are pertinent. First, the oral LD-50 of zirconium oxychloride in rats was found by Cochran[11] to be 3500 mg/kg. This is equivalent to 990 mg/kg. of zirconium ion. Other determinations support this low order of toxicity. McClinton and Schubert[12] determined the toxicity of zirconium citrate prepared by dissolving zirconium oxychloride in citric acid. The interperitoneal LD-50 in rats was found to be 1,710 mg/kg. Harrison and co-workers[13] have shown that hydrated zirconium carbonate produced

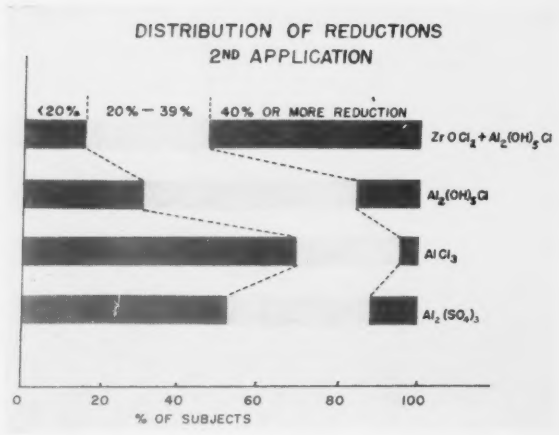


FIG. 4

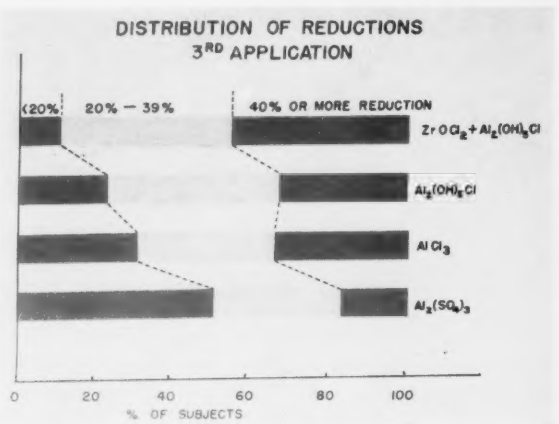


FIG. 5

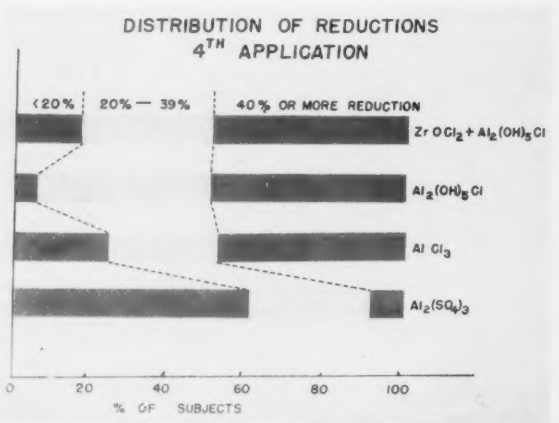


FIG. 6

no adverse effects in a sub-acute feeding test in which this compound constituted 20 per cent of the diet. In an acute percutaneous test, 8 gms/kg. of a 20 per cent ointment was applied to guinea pigs with no adverse effects.

Perhaps these data can best be summed up in the statement by Schrenk[14], "In general, the results of various workers indicate a very low order of toxicity for zirconium compounds . . ." (*Continued on page 238*)

Packaging and Selling

Minors and Major

Children's hand lotion is being packaged by Tinkerbell in a red and white pump dispenser, while Mary Sherman, Inc., seeking to capitalize on consumer preference for king-size packaging, has introduced its Perfumed Bubbling Bath Oil in a 48-ounce decanter. The Tinkerbell item is being marketed through leading department, drug, and children's specialty stores. The private-mold decanter for the bath oil has a blown-in swirl design, which permits an easy and sure grip, and has a wide base and low center of gravity as protection against tipping. Decanter and reverse taper molded closure for the bath oil are being made by Owens-Illinois Glass Co.

Precision-designed for high-speed packaging!

With a flip of the thumb, the new Kimble Snap-Cap is off or on! These resilient, custom-designed plastic caps can be applied on high-speed equipment . . . help you cut packaging costs . . . keep contents fresh and clean, free from dust, dirt, moisture . . . always re-seal tightly.

Opticlear Snap-Cap Vials provide more room for contents because the special, resilient polyethylene cap fits on the outside.

THINGS TO COME in Pharmaceutical Advertising

The drug industry had its fortune told last month when the advertising directors of three pharmaceutical companies and a marketing executive of a fourth peered into the crystal ball and attempted to answer the question: "What About Pharmaceutical Advertising in the Year 1967?" The seers and some of their predictions for ten years hence:

George Rooney, advertising manager of White Laboratories, "The Golden Era of Drugs will be at its zenith. Our industry will be properly ranked among the top ten industries of this country. We will have resisted foreign threats to our supremacy and will dominate world markets."

Joseph J. Ruvane Jr., assistant to the executive vice-president in charge of all marketing operations at Organon, Inc., "The ethical prescription market in just the past three years has grown from 900 million dollars to one billion, 200 million dollars. Even if we project a modest increase over the next ten years, we could expect a two billion dollar ethical prescription market."

Ralph Najarian, advertising manager of Schering Corporation, "Other methods of getting promotional material to the physician will be used. Physicians will be told that by dialing a certain telephone number, much as he does today for the time, weather reports, incoming calls while he is out, he will be able to obtain pertinent information on any product in which he is interested. We may even have a combination television-telephone whereby a two or three-minute sound film will be played back on a screen. Shortly after he hangs up, he will receive by special messenger an envelope containing literature describing the product in detail and giving complete information on its use."

Austin J. Daly, advertising manager of Lederle Laboratories, "Medical journals and direct mail will contain as much color as today's consumer journals. In order for this to be accomplished color must become much cheaper with better results than today's reproductions. Industry research in this field is essential. Consider for a moment the color TV set. It is presenting a continual changing picture of color through electronics. . . . The reasonably sized job printer will have to have at his command processes that will enable him to turn out color reproductions as easily as he turns out black and white today. This may mean entirely new methods—chemical as in photography, or electronic, or combinations of both."

These forecasts are excerpts from talks given January 16 at the Hotel Commodore, New York, by the four-member Pharmaceutical Advertising Club Panel, one of the features of "Printing Week in New York" activities. Moderator of the panel was Ira Conant, advertising manager of Hoffmann-La Roche Inc.

After surveying the development and accomplishments of the pharmaceutical industry during past decades, Mr. Rooney projected the industry into the future:

"It has been said that the drug industry is a self-limiting business—one whose object is to destroy the very thing that brings us our daily bread—namely, disease. But let me dispel any thought about our research programs putting the industry out of business. Specific diseases will be conquered, it's true. The next ten years will produce direct knowledge of the vital mystery of cancer and its cure. The concentrated activity of the greatest research minds of the world into this question cannot go unrewarded. The walls of ignorance will come down.

"In order to provide funds for the ever-increasing industry research programs there will be absolute need for fully patented and protected rights on new products. Only those products which can be adequately supported for promotion and fully protected will be put on the market.

"Companies with large sales forces and good research programs will be forced to license more of the

for repeat sales

COMPLEMENT BOTTLE BEAUTY

with this RISDON aerosol valve's BEAUTIFUL SPRAY PERFORMANCE

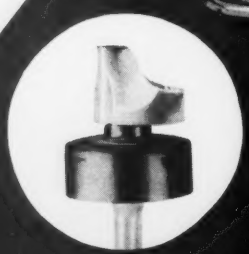
* Wider cone, finer, drier spray cloud and longer lasting contents promote customer satisfaction and brand loyalty.

* Applicable to both 2-phase and 3-phase spray products in either coated or uncoated glass, plastic or metal containers. Special actuator design gives top quality performance on virtually any pressurized product including ultra-low pressure products, water-base products and products not soluble in propellant.

* Permits greater formulation latitude – minimizes propellant – facilitates elimination of dilution effects on fragrance or other qualities of product.

* No metal in contact with contents – No spring – Instant "on-off" action. Vertical or Horizontal spray. Also available with foam actuator.

* Available with custom-designed metal or plastic caps.



contact Risdon for further details and free operating samples . . .

RISDON

THE RISDON MANUFACTURING CO.

RI-71

products of their research to smaller companies for selling. The reason for this is obvious; with sales forces of 600 to 1,000 men, a new product must produce at least one half million or a million dollars in annual sales to support even one month's selling costs. Thus the need for smaller companies will be even greater.

"Better planning will dominate management's thinking in the next few years—not short term plans for this year or next year, not a budget for the next few months, but truly long range planning. Management will establish goals for ten years, or twenty-year plans which will serve to guide the destinies of companies. When a big product hits such a company, that concern will merely accelerate its program. The day to day 'crises' will be lessened, the operations smoothed, the element of gamble eliminated.

"This better planning will encompass advertising budgets. Now they are vulnerable because they stand on a one year basis. Each year is separated from each other year. At this time, if we 'cut' the program on product X it has very little effect—in the minds of some individuals. That little effect though should be considered as a geometric progression through the life span of that product. In other words, $50,000 lost in sales in 1956 might well mean the loss of one and a half million dollars on that product in five years. Advertising is an investment in future sales. No matter how big our companies grow, a million and a half is still a lot of money."

Illustrating his talk with charts, Mr. Ruvane said that "contributions by the pharmaceutical industry to the Nation's health will add to the prescription market in 1967. Where will this increase come from? From new drugs prescribed for many present day refractory conditions, mental illness, cardio vascular disease, and cancer. From prescriptions paid for by those 20 million Americans over 65 who will need and be able to afford treatment prescribed for their disabling illness. From the average American family whose disposable income and health insurance coverage will have increased dramatically by 1967.

"This average family, whose income after taxes will be close to $6000, will be better able to afford medical care than can the average family of today. Moreover, in 1967, every insurable American will carry some type of health insurance. . . .

"Recently doctors have found that by pooling their talents under one roof, they are able to offer complete medical service to the community. . . . At present, 25 per cent of physicians practice group medicine. In 1967, 75 per cent might be engaged in group practice of one kind or another. In city areas a group may consist of four to as many as twenty-four physicians. In the suburban or rural areas, a group may consist of two to ten physicians. Geographically, group practice will locate near new population centers. The shift from farm areas to urban areas will continue and greater numbers of physicians can be expected to be found in the Southeast, Southwest and up and down the West Coast.

"With the general level of education rising and almost six million college enrollments predicted for 1967, the doctor can look forward to treating a more enlightened patient, one who is more apt to come to his office for regular checkups than the average patient of today.

"An important segment of our industry's market in 1967 will be sales to hospitals. There are 8,000 hospitals available to the American people with a total capacity of two million 600 thousand beds.

"Purchases of pharmaceuticals by these hospitals should increase from a present level of 250 million dollars to perhaps as much as 500 million dollars. Although purchases by hospitals of ethical drugs may double in the next ten years, there will probably be little increase in the number of beds. Should medical progress continue at the same rate, the average length of stay in the hospital—now seven days—will be reduced considerably. At present, eight hundred thousand beds are occupied by the mentally ill in our country, but pharmotherapeutic advances could release these facilities for other uses. Incidentally, our Federal government is aware of its responsibility to our veterans in that almost 800 million dollars was spent for Veterans Administration hospital units in 1955. Uncle Sam foots the bill for a good portion of our national health and he can be expected to be one of our most important customers in 1967."

After a brief description of the pharmaceutical industry's basic selling media, Mr. Najarian predicted that "as a result of the physician's increased reliance on pharmaceutical advertising for dependable, up-to-the-minute product information, he will become much more selective in reading journals and promotional material. There will be fewer but more scientifically polished brochures. The advertising manager will demand that these printed pieces have such artistic

AEROSOL SALES UP 592% IN FIVE YEARS*

*Source: Chemical Specialties Manufacturers Association survey—1951 through 1955 (last year for which complete figures are available).

LET CONTINENTAL'S EXCLUSIVE LINE OF SIX DOME-TOP AEROSOLS HELP YOU KEEP PACE WITH THIS GROWING MARKET

Looking for the right package to help you ride the trend to bigger aerosol sales? Then take your pick from Continental's exclusive family of six dome-top aerosols—sized from a dainty 3 oz. right up to a whopping 16 oz.

Whatever your product—insecticide, hair spray, air freshener or other—it's sure to stand out in a dome-top lithographed by Continental's master craftsmen. And, because they let you fill all your container needs with one order, Continental dome-tops can trim your shipping and handling costs. Engineering and research services are available, plus contacts with valve suppliers and commercial fillers, if you wish.

Let Continental's line of six dome-top aerosols start selling for you. Along with a full range of sizes, Continental's expanded production facilities now offer rapid delivery from manufacturing points across the U. S. Call soon.

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4

and professional perfection that the physician will want to read them. The advertising manager will ask for and will receive better scientific copy, less gaudiness, better typography and art, better quality paper, and faster service from all of the graphic arts trades. . . .

"Our pharmaceutical industry is only now becoming aggressive in its public relations programs. The crystal ball predicts that many pharmaceutical companies will up their public relations activities ten to twenty-five times. This accelerated program will stimulate proportionately the physician's interest in the promotional material sent to him, and increase its readership. This increased readership will bring greater responsibility with regard to the technical quality of our literature. It must be remembered that all industry printed matter, regardless of what it is or where it is going, reflects the character of its sender. Thus, from a simple letterhead to the most elaborate, full-length book, the pharmaceutical industry, because of its uniquely ethical and professional position must always exercise good taste and demand the ultimate in printing excellence.

"Pharmaceutical public relations activities of 1967 will take in all forms of promotion from local newspaper, local P.T.A. talks, to full-color, open-circuit television programs. When possible, many of these programs will be kinescoped and will be used for film showings to all types of audiences.

"Closed-circuit medical television has been used for captive audiences, but costs have been rather prohibitive both from the standpoint of production and the cost of the rental of circuits and auditoriums. Within ten years, however, every physician who practices within 75 miles of our big cities will have a special television set to receive closed-circuit program.

"These programs will be regular daily features. On Monday afternoons, for example, "Grand Rounds" from Johns Hopkins will be telecast; on Tuesday morning, The Cancer Program from Memorial Hospital in New York City; on Tuesday afternoon, A Special Program on Arteriosclerosis from the Mayo Clinic; on Tuesday Evening, A Program on Tropical Diseases. Pharmaceutical companies will sponsor these programs and professional commercial announcers will promote products for 30 seconds or more, as is done in regular TV programs today. Naturally, it is impossible to give a complete product description in 30 seconds. The doctor must be told how to administer the drug—what are its precautions and contraindications and what possible trouble signs to look for. The physician will be informed that he can obtain the material used in the telecast and all other product information either by writing or calling.

"These new avenues of promotion do not mean less printing, but more printing. I say this because these programs will be printed in the form of a "Medical TV Guide." Furthermore, the talks and case histories will be printed and given to the physician for future reference.

"On the last prediction the crystal ball was hazy. It tried to tell me of a die-punch card similar to the IBM and Remington Rand that we drop into a special machine for a play back, but at the same time the crystal ball was showing an electronic and magnetic tape for both sound and viewing. At this point, however, the crystal ball cleared and read 1976 and not 1967."

In attempting to predict the role of printing in the 1967 pharmaceutical market, Mr. Daly said:

"We will use more printing in connection with our products—in the form of labels, boxes, inserts, samples, detail materials and printed forms. In our company alone there are over 2600 different forms used to get out the product.

"There is a trend to more point-of-purchase material. However, here we must be cautious—the plastics industry is making great strides in this field. Printing research must look forward and develop new methods and new materials in this area.

"Publications. The medical press today is the finest of any professional group. However, the need for additional space to publish important papers and the availability of the doctor's time to read them make future growth quite dubious from the printing standpoint.

"Direct mail and other advertising printing will grow in longer runs to match the expanding market but saturation in the number of pieces may have been reached. In this area printing can best serve in developing clever and unique forms that will communicate our messages better than we are doing today."

AEROSOL

Interested in explosive aerosol sales records like these set in 1955?

Hair lacquers 53,790,785 **Units per year**
Shaving Lotions 45,387,375 **Units per year**
Insecticides 47,232,131 **Units per year**

Call GENERAL today!

Special Discounts v. Promotional Allowances

by Frederick M. Rowe

In addressing the Antitrust Law Section of the New York State Bar Association on how to comply with certain sections of the Robinson-Patman Amendment to the Clayton Act, Mr. Rowe frankly stated that discriminatory price cuts to favored customers are safer than the granting of promotional allowances.

While the Brokerage Clause has boomeranged on the beneficiaries of the Robinson-Patman Act, the paradoxes of Sections 2(d) and (e) are more subtle. These provisions, too, are successors of the NRA Codes in the food industry banning discriminatory concessions to chain stores in the guise of "bogus" advertising allowances or "window dressing." As interpreted, Sections 2(d) and (e) absolutely forbid a seller to enter into cooperative promotional arrangements except on "proportionally equal" terms with all competing customers. The paradox stems from the lesser legal liabilities imposed on *price* discriminations by Section 2(a).

The special requirements of the "proportionally equal" promotion provisions have lately crystallized. The FTC's Trade Practice Rules for the Cosmetics Industry in 1954 dispel some of the mysteries long hovering around the undefined concept of "proportional equality." Simply put, a seller must now allocate to all competing customers like benefits dollar for dollar of their purchases—either in the form of promotional "services" directly furnished by him, or through allowances toward promotional outlays on their part. Furthermore, the Commission insists that the seller notify all qualified customers as to his promotional plan as well as their entitlement to participation. That obligation, moreover, covers not only competing retailers who purchase directly from the suppliers, but *may* also extend to all competing retailers who purchase his product through wholesalers, and even to those wholesalers themselves.

Here again, failure to comply now means illegality *per se*. Under prevailing interpretations of Sections 2(d) and (e), not only is the Commission relieved from proving injurious effects on competition; also, the seller may not resort to cost justification to show that he gave greater promotional benefits to customers whose purchasing methods contributed to sales economies. And while he may defend a Section 2(e) charge

by justifying discriminatory promotional *facilities* as granted in good faith to meet a competitor's comparable inducements, that defense is not open to justify discriminatory promotional *allowances* under Section 2(d).

Here the paradox unfolds.

An outright price discrimination fares much better. No comparable duties or sanctions attend a straight differential in price—quoted without pretense of promotional obligations on the part of the recipient. The seller need not issue a press release or bulletinize the trade each time he quotes someone a lower price. Nor must he ordinarily ensure that retailers who purchase his product through wholesalers enjoy prices as favorable as competing retailers to whom he sells direct.

In short, a straight discriminatory price cut of five per cent to favored customers—no questions asked and no promises given—is a safer bet than a one per cent promotional deal which must be publicized, proportionalized, and supervised at the risk of *per se* illegality.

This anomaly naturally influences law enforcement as well as compliance. Inasmuch as a Section 2(d) charge today obviates proof of competitive "injury" and blocks out the statutory defenses, more than coincidence may account for the recent filing by the FTC of twice as many 2(d) complaints than under all re-

(Continued on page 266)

glass containers move more drug products

Use **Anchorglass**® *containers sealed with* Anchor® *caps*

...because they are more convenient

CONSUMERS prefer and buy drug products in glass packages because they are easy, quick and safe to open, easy to use, easy to reseal repeatedly. And they show how much is left in the package. Sealed with dependable closures, volatile products cannot evaporate ... dry products are shielded from moisture absorption, retain their full potency. The purity, strength and all the other qualities which characterize your products are thus protected. Pack and move more of your products in quality controlled Anchorglass® packages.

ANCHOR HOCKING
GLASS CORPORATION
Lancaster, Ohio

Packaging and Selling

Drug Consumption

Are you as weary as we are of the prophets for 1960 or for America in that year of 1967, ten years from now?

In almost every issue of the business press, nearly every day in the business section of the newspapers and every convention, these prophets pop up with glowing descriptions of the years to come.

We are not a pessimist and we have never in our life dreamt of selling America short. Nevertheless, we do grow weary of the way in which many of these profits apply very bounding enthusiasm to specific conditions in industry.

Their premises are always that the increasing pace of our population growth, the increase in purchasing power, and the increase in our standards of living, will inevitably create certain conditions for the future.

Here's a typical quote from Mr. Arno H. Johnson, Vice President and Director of Research, J. Walter Thompson Company of New York, "In ten years—by 1967—our productive ability will grow to over $600 billion! That seemingly fabulous level of $600 billion of production of goods and services compared with the $408 billion production rate in the second quarter of 1956, is conservative since it allows only for an increase of 1.7 per cent in population plus a gain of 2.2 per cent in per capita productivity—well below the rate we have demonstrated since World War II." Based upon this premise, Mr. Johnson thinks that we should have a greatly expanding market in pharmaceuticals.

Mr. Johnson then proceeds to demonstrate that the total sale of drug preparations and sundries have not kept pace with expanding consumer markets. They should, he states, be 30 per cent higher sales than now. To quote again, "These packaging consumer markets present a particular challenge to management in the pharmaceutical industry since drug preparations, as a whole, have not held their share of total consumer purchases. Even though prescription sales in drug stores are estimated to have increased twice as fast as total drug store sales, since prewar, the level of consumer expenditures for the all-inclusive classification of "Drug Preparations and Sundries" has lagged behind other consumer purchases. Just to equal the prewar relationship would have required an increase of 30 per cent over the 1956 sales level."

To say that the application of the simple formula of "total personal consumption expenditures" or the percentage rise in consumer disposable income, can be applied as a marketing analysis to the various divisions of the drug trade, seems to us an over simplification or, in fact, a very trivial acquaintance with conflicting forces within our industry.

The truth is that this industry is now, and has been getting, its full and complete historical share of consumer disposable income. Whatever may happen to the various sections of the drug trade, at any one particular time, are the result of such forces as research, public education, the status of national health, and the normal energetic, dynamic growth of this virile and vital industry.

Sales Plus Perfume

According to a retail report scented nylons are bringing new activity to the hosiery department at Oppenheim Collins & Company.

The stockings, which were packed with a scented sachet in each box, have made a hit with main floor shoppers, according to the hosiery buyer and, "The amount of hosiery sold in this promotion has far exceeded our expectations."

In working out this promotion, the original plan called for the use of perfume directly applied to the stocking. This was found unsatisfactory and a special sachet was substituted. One advantage of the sachet, according to this store buyer, is that it restores the scent after each washing when the stockings are replaced in the box.

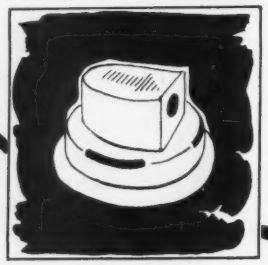
It is very interesting how the use of a perfume odor as a sales stimulant for a retail product refuses to lie down and die. We recall over the last twenty years numerous such experiments with handkerchiefs, with stationery, with towels, with infantwear, and with many other products. In each case the use of a fragrance at the point of sale, combined with other sales elements, such as packaging and color, have been received with enthusiasm by the customer in the store and yet, the use of fragrance in retail selling never seems to find a sustained selling life.

We still think perfume can add a potent sales plus at the point of sale for many packaged products. Some day this sales-plus idea will click—we hope soon.

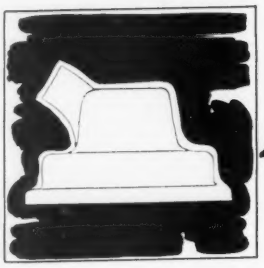
Booming Deodorants

As everyone in this industry knows, deodorants have been one of the truly dynamic growth products in cosmetics. However, according to a recent nationwide survey made for the Toiletry and Cosmetic Division of Owens-Illinois Glass Company, there is

NOW! Pres-O No. 500 Series Valve IN A NEW DESIGN!



with advantages that will help to further your product's popularity



- ✓ ONE VALVE — different buttons to suit *any* product
- ✓ NEW VALVE ACTION—controls flow rate from 5/10 gram per second (hair spray—colognes) to 1 gram per second (insecticides — room fresheners)
- ✓ NEW AND POSITIVE CONTROL of spray direction
- ✓ NEW LOW DISPENSING RATE —gives consumer economy without affecting Series 500's *fast loading properties*

HAIR SPRAY
DEODORANTS
COLOGNES
RESIDUALS
FOAM
THREE-PHASE

PRESSURE FILLING is for the WISE birds!

Pressure filling with Pres-O equipment gives high speed, economical and SAFE loading with *any* type of propellant.

Pres-O equipment is designed and engineered for use with propanes, butanes, alcohol and other combustible materials.

No electrical controls. Air operated. Start and Stop controls are located on *outside* of machine. Handles containers automatically, including crimping and evacuating.

This new Pres-O 500 Series has met acclaim from all who have seen it. *You too,* will see it as an important additional selling point for your product.

All over the world more and still more manufacturers are turning to Pres-O because it offers advantages not found in any other valve.

Write today for full information on

Pres-O: THE BETTER AEROSOL VALVE

OIL EQUIPMENT LABORATORIES, INC.

600 PEARL STREET
ELIZABETH, NEW JERSEY

still a long way to go to meet the full sales potential of these dynamic cosmetic products.

According to this report, 74 per cent of tean-age boys and 65 per cent of teen-age girls do not use deodorants.

Among the adult group, 32 per cent of the men report that they do not use deodorants. According to this report, there seems to be worthwhile possibilities for sales gains among every group of the population. A little more than half of the people questioned report that they use deodorants in both summer and winter.

As you would suspect, women are the largest users of deodorants, that is 98.9 per cent, while the men lag behind with the percentage of use, 68.2 per cent.

In frequency of use, 27 per cent of the women buy a deodorant every two months, 25.9 per cent once a month; 20.7 per cent every three months; and 8.4 per cent as frequently as every two or three weeks.

It Could Happen Here

There is an uneasy feeling around the country that the facial foliage, which so distinguishes the daguerreotypes of our gay '90 ancestors, coming back. According to an article in the Wall Street Journal, there appears to be some grounds for this uneasy suspicion.

This newspaper quotes a New York clinical psychiatrist who states that he notices more beards around these days and thinks that the reason is: "The growing of a beard represents modern man's attempt to regain his once dominant position in a society of women."

According to the editor of the Barber's Journal, the estimate of the number of chin whiskers now current in America amounts to 200,000, "a considerable increase" over a couple of years ago.

Those boys on Madison Avenue are supposed to be very alert as to what is happening in the minds of us ordinary consumers and with the aid of a wide variety of modivation specialists, they are supposed to know the direction in which we are going before we know it ourselves. For this reason there may be some significance in the quick fame which the whiskered head of Schweppe's attained and the notoriety of the gentleman who is currently in the full page advertisements recommending a vodka brand.

It is interesting to note at this particular time that there is a substantially revived interest in men's toiletries. This revived interest is particularly true in a particular part of the trade, that is the prestige or the gift classification. During the last several months quite a number of new brands have appeared on the market and it does seem, at this moment, as if most of the major cosmetic lines, that is the treatment houses and the perfume companies, either have now on the market or have in the planning stage, a group of men's toilet preparations.

The men's toiletry field has an estimated market of over 50 million men. This is primarily a market of a few staple products, mostly of shaving cream. Those toiletry lines which include such products as a cologne, an after shave, a deodorant, or a talcum powder, probably do not reach more than a maximum of 10 million men.

It is interesting to note, however, in an article which appeared in the first issue of Beauty Fashion, then called Toiletry Requisites, forty-seven years ago, that the men's toiletry field, so far as a variety of products goes, was substantially larger at that time than it is today.

During this era of luxuriant moustaches and at a time when the flourishing chin whiskers was beginning to come to an end of their cycle, we had such products as moustache wax, hair brilliantine, and products particularly adopted for the sanitation or the cultivation of the chin foliage.

There is no question that the male of the species Homo Sapiens Americana has become the most innoxious male in the history of biology. Surely nature never intended nature's noblest animal to become so utterly colorless as has modern civilized man.

It is for this reason that we look quite benevolently upon the faint possibility that a larger assortment of facial foliage forms should return to the American male, not only for selfish business reasons, but perhaps even for our hope that the male in America will, as the psychiatrist observed, again have an opportunity for restoring his pristine dominance.

As a parting suggestion of the glamorous opportunities open to the male in this return of facial foliage we mention just a few of the select cuts which are open for the choice of the discriminating male—Mutton Chops, Napoleon III, Czar Nicholas, Waved Assyrian, Shaker, Patriarch and the Archimandrite of Constantinople.

Reverse Diversification

The startling news that two of America's most famous and oldest magazines, that is Colliers and Woman's Home Companion, will follow into oblivion the American Magazine, which disappeared from this old publishing company a few months ago, is rather astounding news for this year 1956 which has been breaking every record in advertising.

We hope it has no significance for business in general that this publishing company is able to extinguish three big enterprises of its business which brought in a loss exceeding $7 million and to retain its much smaller divisions in the book publishing field so that the remaining much smaller company will now net an excess of $2 million. Could this be diversification in reverse?

Loyalty Test

A test of consumer brand loyalty in cosmetics will be made by the Student Marketing Institute, Inc. This institute operates in thirty-seven colleges and universities and uses a closely controlled student-to-student technique with a corps of marketing and advertising professors supervising the work.

Big Advertisers

General Motors Corporation was the largest advertiser in the nation, which certainly means in the world, according to the advertising trade publication "Advertising Age." They spent a stunning $170,-381,860. This figure was a little more than twice that spent by the next largest advertiser, that is Procter & Gamble.

Out of the 100 top advertisers during 1955, here is

New Du Pont survey reveals . . .

AEROSOL COLOGNES PREFERRED

DU PONT FREON

their rating and the amount of money which they spent for just measured media alone. American Home Products Corporation was 15th with $13,976,003; Bristol-Myers Company, 19th, spending $11,063,976; Johnson & Johnson, 43rd, spending $6,254,851; Helene Curtis Industries, Inc., number 56, with $4,971,180; Warner-Lambert Pharmaceutical Company, 61st, with $4,670,849; Revlon, Inc., 62nd, with $4,461,053; Miles Laboratories, 68th, with $4,047,861; Andrew Jergens Company, 83rd, with $3,405,752; Hazel Bishop, Inc., 95th, with $2,984,554.

This was for the full year of 1955, in measured media alone. This, of course, excluded cooperative advertising, direct by mail, and all forms of point-of-sale activity.

Bohack Toiletries

H. C. Bohack Company, a leading New York and Long Island grocery super market chain, has been experimenting with a toiletry department. These experiments, we hear, have been so successful that the chain is now in an expanding period in toilet article marketing. At the present time, sixty stores have this department, which are handled by two rack jobbers, that is Drug Rack Service, Linden, N. J., and Supermarket Drug & Cosmetic, Newark, N. J.

Farmers Market

According to a recent report, farmers' markets are still in a study growth across the country and are commanding more respect from some national manufacturers as a point of introduction where a demonstrator can get a better hearing than either in a department or a chain store or a super market.

The growth of the farmers' market and the increasing success of its particular technique open up an interesting future question for retailing. The farmers' market has the advantage of the absolute bare minimum in overhead. As a matter of fact, it might probably be said that the farmers' market is simply a revival of the famous Pine-Board Stores of the 1930's.

Co-Op Trouble

It looks now as if a substantial number of companies will seriously appraise their entire set-up on cooperative advertising for the coming year The reason for this is that abuses of co-op advertising have been accumulating into such a sorry mess that it is simply too much for some big operators to swallow. Another reason, perhaps even more potent, is the word coming down from Washington that a great deal more attention will be paid to manufacturer's policies on co-op advertising in the next year.

Among the big major companies that are taking a look at the co-op set-up is General Motors and Chrysler, who have announced an entire new approach which practically cuts out dealer participation. At the same time Westinghouse is reported to be casting a critical and sour expression in the direction of their co-op program.

In addition to all the ancient evils of co-op advertising, which have been reported in several investigations by the Association of National Advertisers and which are well known to anyone who has tried to get the best out of this mixed up media, an increasing evil is what is called "double-billing." This is a deliberate collusion between the newspaper and the retailer where the retailer gets the correct bill and is given a padded bill to pass on to the manufacturer.

The cosmetic industry is one of the leaders in retail cooperative advertising. Most of the major companies in selective distribution, particularly those with a substantial position in the department store field, are very heavy users of this form of advertising.

Cooperative advertising has had to be a vital, productive and superior form of advertising to stand up under the multitude of abuses which have been piled on it by the retailer. Among these abuses are a substantial degree of failure by most retailers to coordinate the advertising to any kind of sales effort, abuse of the manufacturer's trust in the selection of media, in the selection of the day to run, in the distortion of copy, in charges for mats and art work, and in quite a few cases a frankly dishonest use of the manufacturer's co-op dollar.

As we have said many times in this department, in our opinion cooperative advertising could be and should be a very potent force in selling. For many companies, particularly smaller companies, it is the most economical and effective way employing their advertising dollars. It is a pity that it has been so badly abused and it is a pity that the leading retailers, as well as top newspapers, do not recognize this abuse more actively and take some steps toward its control.

Big and Bigger

The sales figures are in for 1956 for the big variety chains. These figures have just been issued by Variety Store Merchandiser. Here's how the big chains in this field shape up.

	Stores	1956	Per Cent Chg.
Woolworth	2,095	806,001,198	+5.0
Grant	629	379,769,444	+8.5
Kresge	676	364,107,532	+3.3
Murphy	309	204,828,650	+4.3
Newberry	477	203,434,124	+6.7
Kress	260	167,635,545	—0.2
McCrory	213	113,117,004	+3.1
Green	226	112,445,289	+0.5
Neisner	142	69,196,740	+0.5
McLellan	236	61,950,582	+0.7
Scott-Burr	80	35,430,348	+1.0
Rose's	145	28,434,665	+12.2
Fishman	44	15,482,573	+4.1
Total	5,532	2,561,833,694	+4.4

Too Many Supermarkets?

We have at times made the timid suggestion in this department that it could be a bothersome day for certain people in this industry when the grocery supermarket reaches the point of cut throat competition and starts looking around for some well known popular brands to kick around their store in an effort to maintain their traffic. We have said that we do not believe that fair trade can stand up against such wide spread action among as many as the present existing 25,000

Microscopic examination for structure of plastic components after exposure to aerosol formulation

Known throughout the World

IMITATED...BUT NEVER DUPLICATED–

THE *Precision Valve*

From planning to commercial production, a new aerosol product requires infinite knowledge, effort and research. Almost every phase of human endeavor contributes its share to the completed product.

The final use, however, is dependent upon the proper valve, which is carefully designed, engineered, and manufactured to produce the proper dispersion of spray, mist or foam.

We at Precision are ready to help you, whether it be formula, package design, or production. Our facilities can be our contribution to the success of your business.

Whether it be a million and ten **or just ten**... Precision has or will develop the aerosol valve for your product. Our large quality control department assures you of the finest results along with the economy required for profitable sales.

PRECISION

Precision Valve Corporation

700 NEPPERHAN AVENUE • YONKERS 3, NEW YORK

supermarkets, and we have stated that when chain management looks for a football they are very much more apt to sacrifice the stranger in their store than they are the basic family of food products.

Now we read that Ralph Burger, the president of the Great Atlantic and Pacific Tea Company thinks that so many new supermarkets have been opened in the last few years that there may be a danger that many communities will become "overstored." Mr. Burger believes "Actually, the nation's food retailing machinery is expanding at a faster rate than the population it serves."

Good Management

The American Institute of Management has released its ratings of excellent management for 1956. A total of 410 companies were named for this year.

Among those associated with this industry who qualified for excellent management are Colgate-Palmolive Company, The Gillette Company, Bristol-Myers Company, The Procter & Gamble Company, and Olin Mathieson Chemical Corporation.

How to Cut Costs and Increase Sales

Some interesting things came to light when the head of a large market research organization bought a retail store in order to study the "anatomy of a sale."

Although none of these studies tell anything new to many people in marketing, nevertheless, they suggest an area in which hundreds of millions of dollars of consumer advertising money is going down the drain.

For instance, certain household products from two very well known companies were rotated every two weeks in the main traffic lane near the store's door. It was discovered that B brand, which was not quite as well known as A and did not spend nearly as much on advertising, sold just as well as A when it was in the main traffic lane.

From this we derive the conclusion, if product B, although it is not as well known as A but is well enough known to get customer acceptance, is more conveniently located, the consumer will buy it.

This means to us that a smaller company with a smaller advertising appropriation can make a dud out of a much bigger company with a much larger advertising appropriation if they are much smarter at getting the help and the friendly interest of the retailer for point of sale advantages.

This means that the company's salesmen and trade magazine advertising can play as great a part in product success as does consumer advertising. All three should be essential ingredients in a well balanced formula.

Pollen

This department has often been alert to report the latest developments in cosmetic research. It has even been known, on occasion, to report such research before it took place.

About ten years ago when hormones, vitamins, enzymes, et al. were in the ascendancy in cosmetic research imagination, this column asked a pertinent question, "Why not pollen?," and then proceeded to explore the possibilities of the potential forces that must lie in the fertile protoplasm of the pollen grain.

We are now gratified to report that a cosmetic cream recently introduced in France with some success, contains pollen from orchids. This cream will soon be introduced into the United States with, we expect, the usual cosmetic enthusiasm.

The essential ingredients of orchid pollen, as we are told, are a number of very valuable and unusual proteins, some unidentified vitamins, and some not specifically mentioned amino acids.

As a department devoted specifically to advertising and selling, we cannot help but notice this latest achievement with respectful interest.

Positioning Advertisements

Most advertisers have a fixed idea on the relative value of an advertising position. Some advertisers have developed a phobia on this subject and vigorously insist on such positions as right hand page, front of book, facing reading matter, etc.

It is interesting to note that whenever a careful study is made of readership, it usually blows this phobia sky-high and very often proves that some aggressive advertisers are demanding inferior positions.

For instance, in a new comprehensive report on positioning of national advertisements in newspapers by the Association of National Advertisers' it was found that while most newspaper advertisers prefer an upper right-hand page position for their ads, readership is actually somewhat higher for left hand pages.

Versatile Woolworth

We do not know where Woolworth is headed, but they are certainly trying to go somewhere. Any one who has been into one of these stores in the last few years has been notably impressed with the way this chain is trading up and step by step leaving its historical and unique corner in the retail field.

In addition, Woolworth has successively installed in certain stores (1) self service, (2) credit and installment purchasing, (3) a mail order catalog.

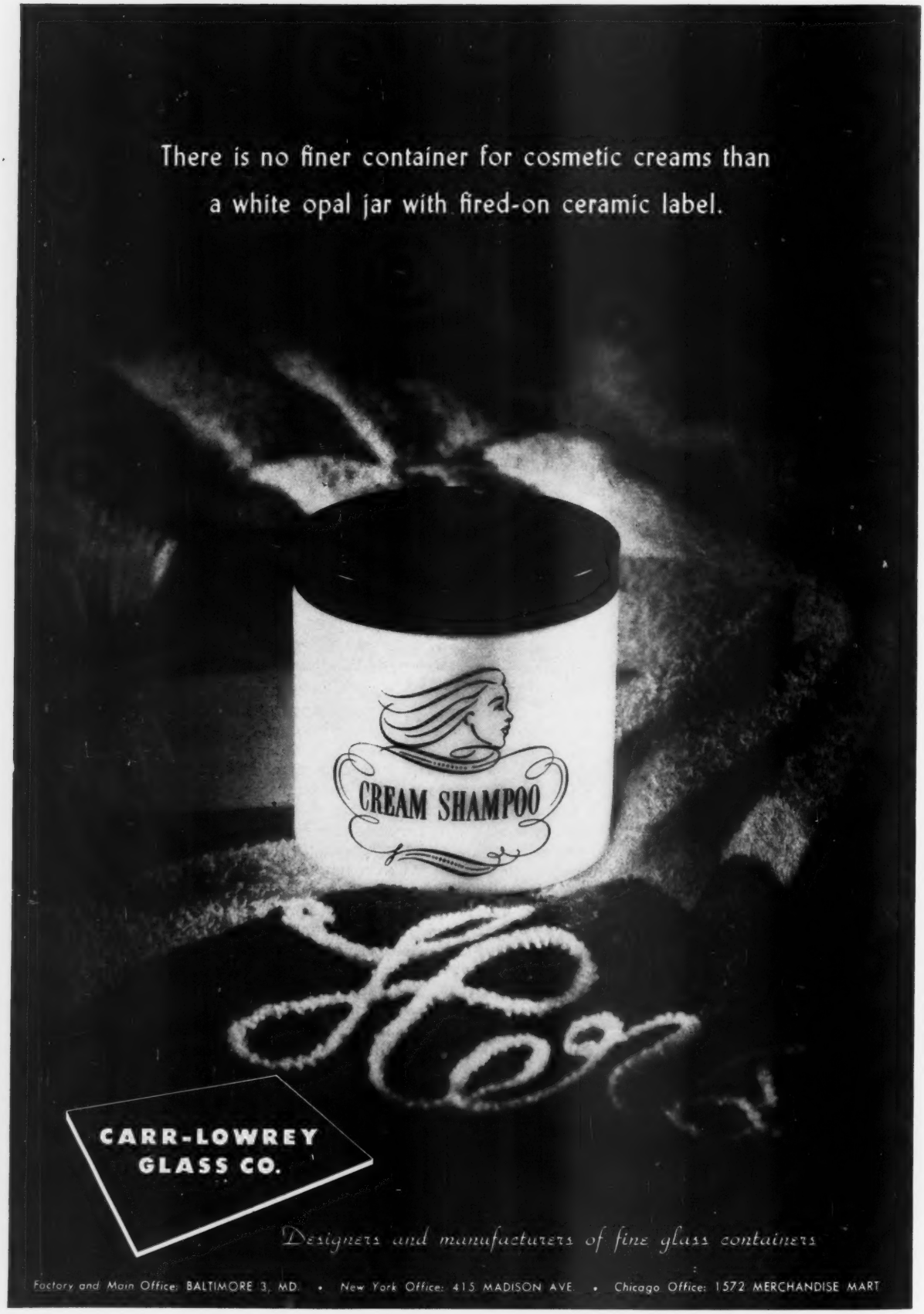
We have not heard yet of a house to house division, but the cosmetic industry is buzzing with a new development in a New Orleans Woolworth store. This is a 30 foot counter carrying most of the finest imported perfumes and high-priced treatment lines and making use of paid demonstrators behind the counter.

This move by Woolworth, if attempts are made to expand it to other stores, will cause some heavy rumblings in certain retail and manufacturing divisions of this trade.

New Factor Package Division

Max Factor & Company has established a new division to expedite the development of new products and packaging changes of established products. This will be known as the Project Development Division and it will be situated at the company's new general offices and laboratories in Hollywood.

Philip Libson, director of purchasing for the past three years, has been named manager of the new division. Dave Koslow, formerly assistant purchasing director, becomes director of purchasing.


There is no finer container for cosmetic creams than
a white opal jar with fired-on ceramic label.
CREAM SHAMPOO
CARR-LOWREY
GLASS CO.
Designers and manufacturers of fine glass containers
Factory and Main Office: BALTIMORE 3, MD. • New York Office: 415 MADISON AVE. • Chicago Office: 1572 MERCHANDISE MART

NEWS IN PACKAGING...

Continental Polyethylene Bottle Steam Sterilized up to 250° F.

A new type polyethylene bottle, able to withstand steam sterilization at 250° F. for 30 minutes, has been made by the Plastic Container Division of Continental Can Company. The bottles can be attractively colored for greatest effectiveness at point-of-sale.

The Division of Pharmacology of the U. S. Food and Drug Administration has stated that these particular low pressure polyethylene bottles are considered acceptable for use as containers or packaging material for steam sterilized or non-sterilized food, pharmaceutical, and cosmetic products.

Promoted by Armstrong

John R. Leaman has been promoted to manager of drug and prescription container sales for the Philadelphia district office of Armstrong Cork Company's Glass and Closure Division. He will continue to devote a portion of his time to wholesaler relations for the division.

JOHN R. LEAMAN

California Packaging Club Officers

Irl Korsen, of Eureka Press, printers and lithographers, has been elected president of the California Packaging Club, succeeding William Nenstiel of the Robert Gair Co.

Also elected: Roy Donahue, cosmetic division manager, the Andrew Jergens Co., vice president; Jess McBee of the Lord Baltimore Press, secretary; James Young, purchasing agent, Avon Products, Inc., Pasadena, treasurer.

Directors are Andy O'Neil, I. F. Schneir Co., Inc.; Phil Libson, Max Factor & Co., who is also the founder and first president; and Al F. Commagere, R. G. Byington Co.

Perfume in Tubes

Orange Blossom Creme Perfume is being packaged by the Ponce de Leon

Co., Jacksonville, Fla., in tubes manufactured by the Sheffield Tube Corporation. "From the Blossom to You" is the slogan printed on the tubes, which have basic colors of orange and white.

American Can's Central Div. V.P.

F. B. Newcomb, formerly manager of sales for the American Can Company's Central Division, has been elected vice-president in charge of that division, according to William C. Stolk, president of American Can. Mr. Newcomb succeeds L. W. Graaskamp, who has retired as vice-president and a director but will continue to serve the company as a consultant.

Elizabeth Arden Sales Corp. is using Rapid Ribbon—plastic bands with enough elasticity to fit snugly around a bottle, jar or can, or to hold two or more packages firmly together—for tying in Arden's Puff-Puff dusting powder with its Blue Grass toilet water.

'56 Glass Containers Set Record

Glass container shipments in 1956, up 2.4 per cent over 1955, set an all-time record, according to figures released by the Glass Container Manufacturers Institute, Inc.

Domestic shipments of new glass containers by the 38 U. S. glass container manufacturers who are members of GCMI and who represent approximately 95 per cent of the industry, totaled 18,594,000,000 units in 1956, as compared with 18,167,000,000 in 1955.

Shipments of glass containers for use in packaging of drugs and cosmetics—some 21 per cent of the total—were 3,835,008,000 units in 1956 compared with 3,832,848,000 in 1955, an increase of 0.1 per cent.

Zahn Serving in Government Post

Lawrence H. Zahn, manager of the Methods and Package Development Division of Ciba Pharmaceutical Products Inc., has been granted a six months leave of absence from the company to serve as deputy director of the Containers and Packaging Division of the Business and Defense Services Administration of the United States Department of Commerce.

W. SCOTT SMATHERS

Following in His Father's Steps

W. Scott Smathers has been appointed district manager of the Pittsburgh sales office of Knox Glass, Inc., succeeding his father, Win S. Smathers, who retired January 1 after twenty-three years with the company, according to an announcement by C. L. Rossman, general sales manager of Knox.

Carr-Lowrey NY Office Asst. Mgr.

Paul deB. Scott, who joined the sales staff of Carr-Lowrey Glass Company in 1929, has been promoted to assistant manager of the firm's New York office. He will continue his sales duties in addition to his new responsibilities.

Presenting the NEW exquisite

with the new FUTURA CAP, shown in black—also comes in brilliant GOLD-COTE... bright touches of elegance for the purse or boudoir.

RICHFORD* SPILLPROOF PERFUME FLACONS

Observe the beautifully angled silhouettes of these EXQUISITE new perfume bottles, and note the perfectly blending FUTURA caps. When you consider that each is fitted with the fabulous SPILLPROOF feature, you can understand why we are so enthusiastic about them.

in 1 dram, ½ ounce, 1 ounce, and 2 ounce sizes

Write now for samples and prices.

Spillproof perfume bottles are the magic perfume containers that have launched millions of sales slips — their customer appeal and proved acceptance will help the sales of your product.

RICHFORD CORPORATION

OFFICE & PLANT: 3618 OCEANSIDE RD., OCEANSIDE, N. Y.
SHOW ROOMS: 350 FIFTH AVE., NEW YORK

Patent THOUGHTS AND TRENDS

by Thomas Cifelli, Jr
PATENT ATTORNEY*

A PATENT TREND OF THE LAST 20 YEARS

The writer was recently taken to task because, in spite of the title of these articles, there has never been any mention in these columns of any fundamental long term trend which has occurred in the experience of the writer, covering a span of two decades.

There have, of course, been a number of events which have been important patentwise over the years in question. However, the single thing which, after due reflection, stands out in this person's view as the outstanding trend of the last 20 years in the seemingly paradoxical situation wherein the attitudes of the U. S. Patent Office on the question of what constitutes a patentable invention has stiffened considerably, while, at the same time, the attitude of the federal courts on this same question appears to have moderated considerably. About 15 to 20 years ago, if one could show that his contribution was novel the chances are he could obtain a patent on it. This is so even though the Patent Office also required a showing of "invention." Today, it is a somewhat difficult task to convince a patent examiner that a novel contribution is so unobvious as to warrant the issuance of a patent.

About 15 to 20 years ago, the federal courts, on the other hand, appeared to be quite unsympathetic to patents. It has been said that judges read the political returns and perhaps because of this situation and because of the economic philosophy of the 30's it is not surprising that the decisions of the courts in patent cases were not favorable. Some such decisions even went so far as to include statements to the effect that the only patents which were valid were the ones that the courts had not laid their hands on.

The situation today is very different. While the Patent Office is still quite sympathetic to the patent system, and nothing herein is meant to indicate otherwise, it is nevertheless believed to be a demonstrable fact that its rulings are such as to make it much more difficult today to obtain a patent than was the case about 15 to 20 years ago. Some of the rulings by which this result has been brought to pass have already been commented on in these columns in previous issues.

A little consideration will show that the changes in the attitudes of the Patent Office and courts are understandable. The Patent Office, being an administrative body and hence bound by rules and regulations and decisions of the past, is not as quick to reflect public opinion as are the courts. Consequently, the political and economic theories which may have influenced the courts in the 30's and early 40's were not factors in Patent Office rulings until decisions of the courts reflecting such theories were handed down. As time went on, it is only natural to suppose that the Patent Office officials, learning of these adverse comments made in the court decisions, accordingly took steps to counteract such comments. Those steps culminated in the more rigorous handling of patent applications, which characterizes present Patent Office procedure.

Now, what caused the change in general attitudes on the part of the federal judges. It is believed by this writer that World War II had a marked influence in this regard. Anyone whose memory goes back that far will certainly recall that even newspaper headlines around the time that Hitler was active blamed the U. S. patent system for many of our problems, including our lack of preparedness for war. Anti-patent articles and congressional hearings where anti-patent views were aired and publicized were the order of the day. Then, President Roosevelt made a statement linking the patent system and victory. This statement, if memory serves correctly, went somewhat as follows:

> Patents are the key to technology;
> Technology is the key to production;
> Production is the key to victory.

As everyone knows, American technology did not fall apart during World War II but indeed met every challenge. Proponents of the patent system not being opportunistic, none of them came forth to claim victory in World War II for the U. S. patent system. Nevertheless, it does seem reasonable to suppose that the learned federal judges could not help but see and realize that the U. S. patent system, when put to the test, met it. Or, at the very least, it was clear that the patent system was not the "bogey man" that it had been pictured.

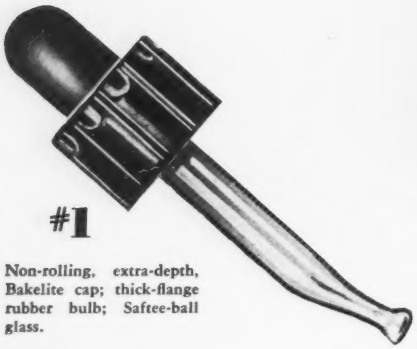
What is the meaning of the two apparently opposed trends mentioned here?

For one thing, it does seem to show the democratic system of checks and balances operating in the patent system. Just as there are checks and balances between the legislative and executive branches of government, between the legislative and judicial branches of government, and between the executive and judicial branches of government, a student of any phase of U. S. government will sooner or later realize that *within* any one healthy part of the American economy there also exist checks and balances. This appears to be true of the patent system too.

Another conclusion which can be drawn from the foregoing, and one which is of more immediate concern to patent owners, is that those who do succeed in meeting the standards of the Patent Office now have a much better chance to have their patents sustained in the event they have to go to court. Indeed, the whole climate regarding patents is so much better today than it was 20 years ago that immediately upon issuance of a patent there is a respectability which attaches itself to the patent and which of course means that competitors are more likely to recognize the patent.

As in all generalizations, particularly those made in a field of human endeavor, they can not be considered accurate in all specific cases. In other words, the generalizations made here should not be considered as giving an infallible yardstick. The Patent Office will probably still grant patents which at first blush at least will cause many to won-

*Richards and Cifelli, Newark, New Jersey



#1

Non-rolling, extra-depth, Bakelite cap; thick-flange rubber bulb; Saftee-ball glass.

#3

Regular plastic cap; thin flange rubber bulb; semi-blunt glass.

#4

Metal cap: AMEKINE oil-resisting synthetic rubber bulb; blunt glass.

Improved bottle shape. Designed to lie flat for convenient labeling. Front provides ample label space.

New Perfection

DROPPING PARTS

Protect YOUR PRODUCT'S REPUTATION

Your product's hard-won reputation is risked every time it is taken from the medicine chest. Any inconvenience, such as a non-functioning dropper, will be permanently associated with it. You can remove this risk by entrusting your carefully-compounded preparation to New Perfection dropping parts—painstakingly made of quality materials for the utmost in dependability and cleanliness.

✱ ***We can supply dropping parts to fit your bottles or furnish complete with our own bottles.***

RUBBER BULBS

are supplied in many styles and colors. Oil-resisting AMEKINE synthetic rubber is used for oil preparations; natural rubber is supplied for other products.

CAPS

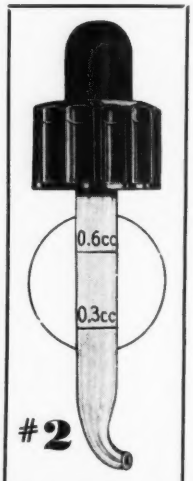
of plastic or metal, can be furnished in a complete range of sizes and colors.

DROPPER GLASSES

are available in a wide variety of styles and sizes. Plain or CALIBRATED in any color to mark specific dosages.

BOTTLES

in an attractive modernistic style in Amber, Blue, Green or Clear glass, are available, complete with dropping parts, in the following sizes: ⅛, ¼, ½, 1 and 2 oz.



#2

Non-rolling extra-depth Bakelite cap; thick flange rubber bulb; CALIBRATED special bent glass.

Write for Samples and Quotations

PENNSYLVANIA

GLASS PRODUCTS CO. INC.

"Glass Goods of the Better Kind"

430 N. CRAIG ST. • PITTSBURGH (13), PA., U.S.A.

der why the patents were issued. On the other hand, there doubtless will be cases where patents are given what may appear to be "rough" treatment in the courts. Nevertheless, it is felt that the entire patent system of the U.S.A. is stronger today than it was 20 years ago as a result of both of the changes mentioned here; and it is submitted that this is the main trend of the last 20 years.

Cycloserene

Cycloserene, a new antibiotic, was the subject of U. S. patent 2,773,878, obtained by Chas. Pfizer & Co.

The new antibiotic is said to show considerable activity against a number of different gram-negative and gram-positive microorganisms, and notably against the mycobacteria. It is effective in human therapy for bacterial infections and tuberculosis. It is said to have an unusually low toxicity which accompanies its generally high activity.

The following table shows the antibiotic spectrum of a crude preparation of the new composition against a number of different microorganisms. The sample tested had a potency of 200 C. D. U./mg. Purer samples demonstrate higher activity. The figures in the table indicate the concentrations in micrograms of the cycloserine preparation required per milliliter of nutrient agar, to prevent bacterial growth on the agar; the symbol + indicates growth, and —, no growth.

Microorganism	Concentration				
	500	100	50	10	1
A. aerogenes[1]	—	+	+	+	+
Do[2]	—	+	+	+	+
Do	—	+	+	+	+
E. coli	—	—	—	+	+
Proteus sp.	—	—	+	+	+
Pseudomonas sp.	—	+	+	+	+
M. albicans	+	+	+	+	+
S. typhosa	—	—	—	+	+
K. pneumoniae	—	+	+	+	+
S. paratyphi A	—	—	—	+	+
S. paratyphi B	—	—	—	+	+
Staph. aureus	—	—	—	+	+
B. subtilis	—	—	—	+	+
St. fecalis	—	—	—	+	+
Brucella sp.	—	—	—	—	+
Trichophylon gypseum	+	+	+	+	+
Myco. ranae	—	—	—	+	+
Myco. phlei	—	—	—	—	+
Myco. 607	—	—	—	+	+
Myco. smegmatis	—	—	—	+	+

[1] Aureomycin-resistant strain.
[2] Streptomycin-resistant strain.

Examples taken from the patent to show the manner which cycloserene may be formed, recovered, concentrated, purified and obtained in therapeutically useful form follow:

Example I

A fermentation medium containing the following proportions of ingredients was prepared:

	Parts by weight
Soybean meal	*30.0*
Corn starch	*5.0*
Corn steel liquor	*3.0*
Sodium nitrate	*3.0*

This material was made up with distilled water to provide 41 grams per liter, and the mixture was adjusted to pH 7.0 with potassium hydroxide solution. To the mixture were added per liter 5.0 grams of calcium carbonate and 7.5 ml. of soybean oil. Two thousand milliliter portions of this medium were then added to fermentation vessels, equipped with stirrers and aeration spargers, and sterilized at 121° C. for 60 minutes. After cooling the flasks were inocculated with a suspension of our new strain No. ATCC 11924 of *S. lavendulae*, obtained from the surface of agar slants. The flasks were stirred for four days at 28° C. at approximately 1700 R. P. M. At the end of this period the broth was found to contain cyclosterine in the amount of about 250 C. D. U./ml. of broth. The mycelium was separated from the broth by filtration. The broth had a pH of about 7.5. Tests showed it to be highly active against a variety of microorganisms.

Example II

One liter of cycloserine fermentation broth obtained as in Example I was adjusted to pH 10 with dilute sodium hydroxide and stirred with 10 grams of activated carbon for 30 minutes. The carbon was removed with a diatomaceous earth filteraid and the fermentation broth was adjusted to pH 2 with dilute sulfuric acid. A further portion of activated carbon was added to the broth, the mixture was stirred for 30 minutes, and the activated carbon was again removed by filtration and washed with a small volume of water. There was little loss in cycloserine activity and the solution obtained was practically colorless. The partially purified acid solution of cycloserine was then adsorbed on a column of "Amberlites IR 120" in the hydrogen cycle. The column was washed with a small volume of water and then the antibiotic was eluted fractionally by means of a solution containing one milliliter of concentrated ammonium hydroxide per 100 milliliters of solution. Little activity was removed from the column until the effluent reached a pH of 6.1. The fraction obtained with the effluent at a pH of 6.1 to 6.4 was recovered and dried from the frozen state. The product consisted of a fine, pale pink powder having a cycloserine activity of 200 C. D. U./mg. It was most suitable for use in therapy because of its low toxicity and considerable antibiotic activity.

A portion of this concentrate was dissolved in a small volume of 50 per cent methanol and applied to a column of activated alumina which had been washed with 50 per cent aqueous methanol. Further 50 per cent methanol was passed through the column to develop and purify the antibiotic fractions. As the solution passed out of the column, it was divided into a number of fractions of equal volume. By removing the methanol under vacuum and drying from the frozen state, material of high cycloserine potency and having substantially no color was obtained.

Smooth Muscle Relaxants

Geschickter and Rice, two Maryland inventors, obtained U. S. patent 2,774,787, on new polyhydrophthalamic acids for relaxing spasms in smooth muscles.

Spasm of the smooth muscles has a number of disagreeable manifestations depending upon the particular smooth muscle involved. Asthma results from spasm of the bronchi; colitis, ulcer and constipation may result from spasm of the smooth muscle of the pyloric region and gastro-intestinal tract; and dysmenorrhea results from spasm of the smooth muscle of the uterus. In the blood vessels, spasm results in hypertension and Raynaud's disease.

Many of these manifestations of smooth muscle spasm are also accompanied by hypersecretion, as is well known in the case of asthma, ulcer, colitis and hayfever.

It is known that smooth muscle spasm is caused by the presence of cholines in the system.

According to the patent:

Basically, choline includes a quaternary ammonium group and may also include hydroxy, carboxy, alkyl carboxy, acetyl and other groups. The composition of choline is known and frequently several types of choline are

(*Continued on page 267*)

For more lustrous hair...

specify more uniform...

Pendit® CA

CREME RINSE BASE

by Raymond

The uniformity of any rinse is dependent on the uniformity of the base. PENDIT CA is a creme rinse base manufactured primarily for use in creme rinses. A paste based upon a cationic quaternary ammonium compound, PENDIT CA is batch-tested to virtually eliminate consistency problems. A very light colored hair conditioning agent that remarkably improves the combability and manageability of the hair, it also has powerful germicidal and deodorant properties.

PENDIT CA is used as a bodifier to regenerate damaged and abused hair, remove tangles and snarls. Easy to formulate, PENDIT CA is kind to hair—makes it softer, more lustrous—makes hair feel better, look better. And its antistatic properties reduce the effort needed to comb hair.

PENDIT CA IS VERSATILE

PENDIT CA can be the answer wherever a cationic emulsifier or wetting agent of unvarying physical properties is required. It is successfully used as a fabric softener, textile lubricant, mould inhibitor and industrial deodorant. A stearyldimethylbenzylammonium chloride, it is stabilized against separation in the drum.

® Pendit is a registered trade-mark of Raymond Laboratories, Inc.

Write for complete formulation information, samples and prices

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NEWS...

Perfumers' Society Officers

Pierre Bouillette of Givaudan-Delawanna, Inc., has been elected president of The American Society of Perfumers, Inc., and Christian F. Wight, van Ameringen-Haebler, Inc., former president of the Society, has been elected chairman of the Society's board of directors.

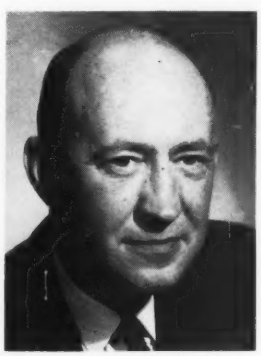
August J. Schwindeman, Dodge & Olcott, Inc., has been elected vice-president; Dr. Oliver L. Marton, Shulton, Inc., and Edwin D. Morgan, Jr., Lever Bros Co., remain secretary and treasurer respectively.

Newly elected directors are Herbert Sommer, Prince Matchabelli, Inc., and Dr. J. Hilary Herchelroth, Cresp-Martineng Corp., while Theodore Bumiller, Jr., Givaudan-Delawanna, Inc., and Maurice A. Meunier, Las Parfums de Dana, Inc., remain in office as the other two directors.

Childs Retiring, Rowe Named

Preparing for the retirement of Bruce T. Childs, superintendent of capsule manufacturing operations at Eli Lilly and Company for almost 40 years, Wendell B. Rowe has been appointed manager of the capsule departments.

Mr. Childs, who plans to retire in August, will serve meanwhile as a staff assistant to the director of the Pharmaceutical Production Division. Mr. Rowe has been assistant superintendent of the capsule plant for ten years. His employ with Lilly, which began in 1937, was interrupted in 1942 by military service.



WENDELL B. ROWE

Gar-Baker Marks 25th Year

James H. Baker, president of Gar-Baker Laboratories, consulting chemists, New York, last month celebrated the 25th anniversary of his company. Mr. Baker, who is president-elect of the Society of Cosmetic Chemists, explains that the "Gar" in the corporate name "was derived from Dr. Ira D. Garard who then was professor of chemistry at New Jersey State College for Women at Rutgers University. Dr. Garard was one of the first members of the firm, although today he is pretty much retired from both business and teaching."

When the business was established, the intention was to specialize in the food and drug fields, but it was soon found that cosmetic and industrial problems were taking the largest portion of time. Recalling that cosmetic chemists were "frowned upon" by the industrial researcher 25 to 30 years ago as "cook book artists," Mr. Baker said, "The

JAMES H. BAKER

number of excellent cosmetic products now on the market is proof that this branch of chemistry has reached maturity. The present day cosmetic chemist is well-grounded in many phases of the science, including theoretical, analytical and biological chemistry, in bacteriology, irritation, and toxicology." As further proof of the importance of chemistry to cosmetics, Mr. Baker pointed out that the Society of Cosmetic Chemists, which started in 1945 with 12 members, now has more than 580 members in the United States alone.

Bengue President

Henri S. Seltzer has been elected president of Bengue, Inc., succeeding the late Theodore Seltzer. The new president, who joined the company in 1927 as a chemist, has been production manager and plant manager. In 1941 he was made treasurer of the company.

DR. W. THOMAS SPAIN

Purdue Frederick Med. Dir.

W. Thomas Spain, M.D., has been appointed medical director of The Purdue Frederick Co., Benjamin Schneider, president, has announced.

Dr. Spain has been a member of the medical research staff of Merck Sharp & Dohme, director of pharmaceutical research for E. R. Squibb and Sons, and director of medical service of the Ortho Pharmaceutical Corp.

Factor Annual Sales Meeting

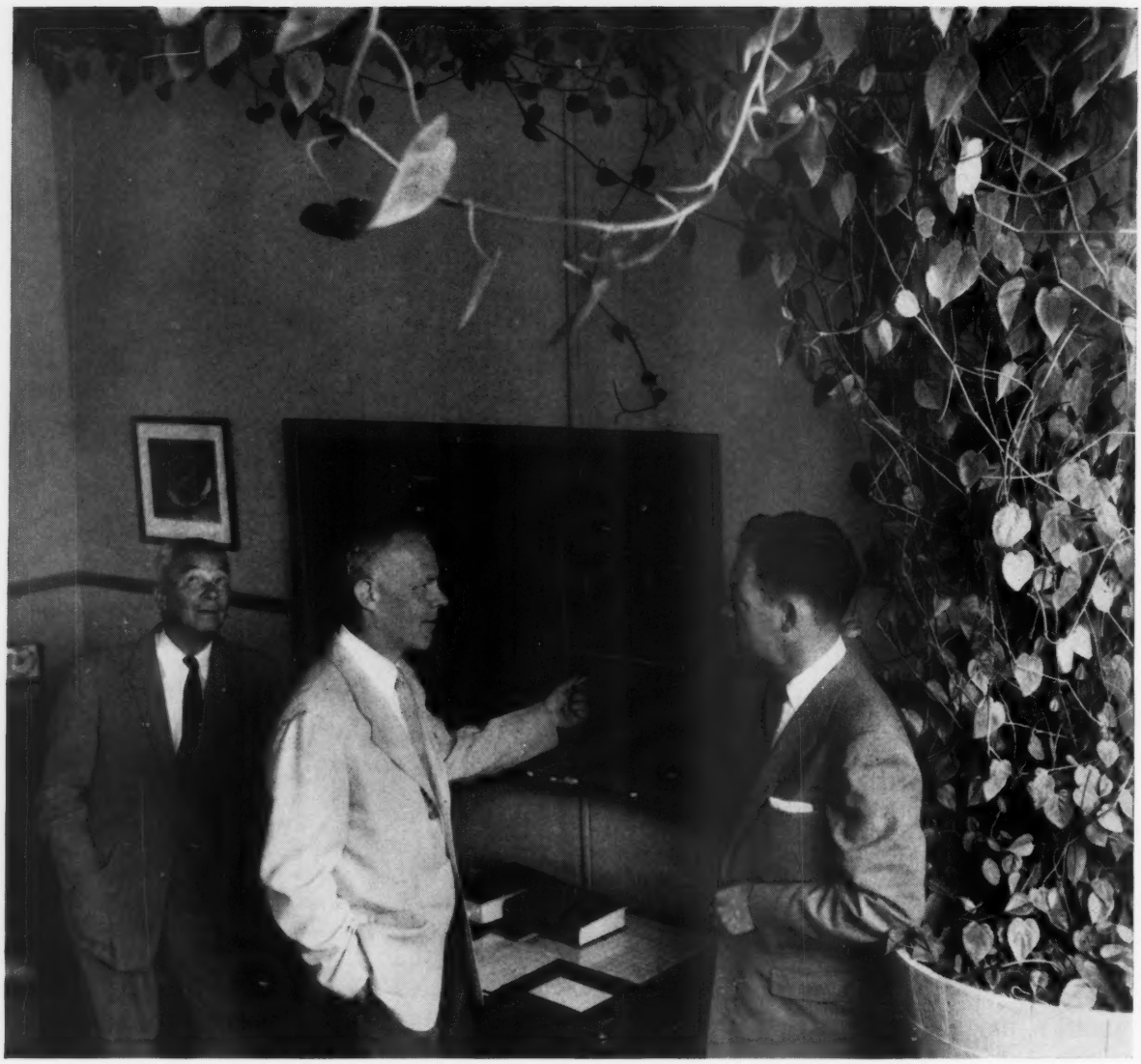
More than 150 territorial representatives, traveling salon consultants, officers, directors and other executives of Max Factor & Co. attended the firm's annual year-end sales meeting held recently in Chicago. Davis Factor, board chairman, outlined advertising, sales promotion, and merchandising plans for the first six months of 1957 and explained how record sales were achieved in 1956.

Assisting him were Max Factor Jr., president; Max Firestein, executive vice-president; Lee Rosene, Ben Gilmore and Al Rubin, the company's three sales managers; and Kenneth D. Caldwell, vice-president and advertising director.

Other executives who attended and participated were Leon H. Levi, administrative vice-president, and Alfred Firestein, a company director who heads the Pharmaceutical and Specialty Division.

Manager of SKF, S.A.

John R. Klopfer has been appointed manager of Smith, Kline & French S.A., Mexican subsidiary of the Philadelphia firm, according to F. M. Rivinus Jr., vice-president of SKF Laboratories and president of the parent company's foreign subsidiaries. M. Klopfer succeeds Douglas H. Wiltshire, who resigned effective January 15.



The **vitamins** and the philodendron

The man with the chalk is Dr. Norris Embree, our director of research. The other two are a customer's technical staffers, running down rumors of new vitamin A derivatives. The vegetation is a philodendron.

The philodendron comes under the jurisdiction of the Landscaping Division, Yard Department, Kodak Park Works, who feel that they have not been taken rightfully into confidence and have been miffed for a decade. They suspect that Doctor Embree usurps their prerogatives by feeding the monster something probably related to vitamins A or E. Else what would be the point?

Doctor Embree never talks about the jungle that crowds him, which adds to its aura of significance. While visitors sneak glances at the cryptic greenery, he holds forth instead with new viewpoints and facts about vitamins in a manner to fascinate and inspire manufacturers of finished pharmaceutical products. Since we don't make any of our own, he can afford to speak freely.

Our business is producing vitamins A and E in bulk for immediate shipment from stock. For information, a quotation, or an appointment to see Doctor Embree's philodendron, write ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York, Chicago, and Memphis • W. M. Gillies and Company, Los Angeles, Portland, and San Francisco • Charles Albert Smith Limited, Montreal and Toronto.

leaders in research and production of vitamins A and E

DPi

Also . . . distilled monoglycerides . . . some 3500 Eastman Organic Chemicals for science and industry

Distillation Products Industries *is a division of* **Eastman Kodak Company**

Fragrance Symposium

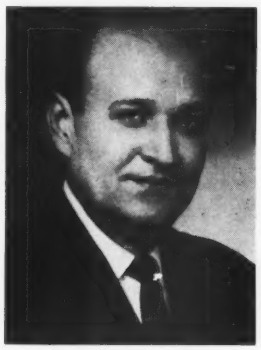
Reports on recent progress in various fields of perfumery, an analysis of current trends, and a prediction of probable future lines of development in the industry will be presented at The American Society of Perfumers' Third Open Symposium on Fragrance, to be held March 20 at the Essex House, New York. The program will begin at 2 P.M. Theme of the Symposium is "What's Ahead in Fragrance?"

Camille H. Bourguet, American Aromatics, Inc., will speak on the perfumer's art—the language and indexing of fragrance; Harry C. Saunders, Givaudan-Delawanna, Inc., on man-made odorants—the future of creative synethesis; Paul Z. Bedoukian, Ph.D., consulting chemist, on the science of odorants—research trends in perfumery materials: Amos Turk, Ph.D., consulting chemist, on household fragrances—odor preferences among consumers; Ernst T. Theimer, Ph.D., van Ameringen-Haebler, Inc., on instrumental analysis in the perfume industry; H. Gregory Thomas, president of Chanel, Inc., on fragrance types and merchandising methods.

The discussion period will begin with comments by H. D. Goulden, scientific director of The Toilet Goods Association, and Frazer V. Sinclair, publisher of Beauty Fashion and Drug and Cosmetic Industry. Pierre L. Bouillette of Givaudan-Delawanna, president of The American Society of Perfumers, will present an honorary membership in the Society to Mr. Thomas, a past president of The Fragrance Foundation. Following the program, a reception will be held at 5:30 P.M., with a buffet supper served at 6:30.

The committee arranging the Symposium consists of: Mr. Bouillette, Mr. Bourguet, Everett D. Kilmer, Lever Bros.; Oliver Marton, Ph.D., Shulton, Inc.; Raoul Pantaleoni, Alpine Aromatics, Inc.; Christian F. Wight, van-Ameringen-Haebler, Inc.; and Chairman Paul G. I. Lauffer, Ph.D., The House of Tangee, who will preside at the Symposium. Programs and reservation forms will be mailed to the Industry.

Dr. Hugo H. Schaefer, Dean Emeritus of Long Island University's Brooklyn College of Pharmacy, listens as Edward Neimeth, president of the college's board of trustees, reads a resolution passed by the board naming a lecture hall at the college the "Hugo H. Schaefer Hall" in honor of Dr. Schaefer's contributions to pharmaceutical education.



ALBERT CHERVENAK

Squibb Veterinary Dept. Mgr.

Albert Chervenak has been appointed manager of E. R. Squibb & Sons veterinary department, according to an announcement by W. L. Arscott, vice-president and director of sales.

Dr. Nathan Weiner Honored

Dr. Nathan Weiner, assistant director of research for Endo Laboratories, has been elected a Fellow of The New York Academy of Sciences.

Appointed by Merck

Jerry H. Stuart has been appointed chief design engineer, and Thomas M. Shea, chief plant engineer in the Merck Sharp & Dohme Division of Merck & Co., Inc. it has been announced by Chief Engineer John M. Walgora.

THOMAS M. SHEA

Lilly Promotes Lake, Stamper

Thomas H. Lake has been promoted to executive vice-president of Eli Lilly International Corporation and John R. Stamper to vice-president and director of the British and Eurasian area. Mr. Lake will fill a position vacant since 1954. Mr. Stamper succeeds Alfred L. Young, who has retired.

Mr. Lake began his eleven-year career with Lilly as a representative of the domestic company in Cleveland. Three years later he was transferred to International's home office in Indianapolis as chief of the promotional supplies and advertising department. In 1952 he became an export representative in Santurce, Puerto Rico; in 1953 he was named Lilly's general representative in Lisbon; in 1954 he returned to the home office as an associate director of the Latin America area.

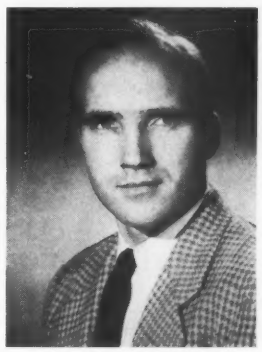
Mr. Stamper, who was born in England, spent two years as vice-president and general manager of Eli Lilly and Company (Canada) Limited in Toronto before transferring to Indianapolis in 1955 as associate director of the British and Eurasian area.

W. H. English Jr. Retires

H. J. Baker & Bro., 600 Fifth Avenue, New York, has announced the retirement of William H. English Jr. as a partner. The firm has for many years been sole United States representative for John & E. Sturge, Ltd., Birmingham, England, makers of precipitated calcium carbonate, U.S.P.

Hoffmann-La Roche Appoints

Edward P. Bacsik has been appointed field sales manager for the Eastern region of Hoffmann-La Roche Inc. Robert H. Schmidt has been named field sales manager for the Central region, and George N. Wagner, field sales manager for the Coastal region.



JERRY H. STUART

Perfumer's Notes

ON A FEW VERONA SPECIALTIES

ISO-BUTYL FURYL PROPIONATE — A top note of freshness and fine aroma for perfumes. Also used in flavors as an addition to Pineapple, because of its characteristic aroma and freshness.

ALPHA-METHYL CINNAMIC ALDEHYDE — A base for synthetic Oil of Cassia, to which it adds softness and stability.

CYCLAMAL® — Stable in perfumery. Will not discolor or irritate in cosmetics and soaps. Used up to 5% in perfume bouquets for its Lily of the Valley-Muguet character. The exceptional purity of Verona Cyclamal makes it outstanding for its clean, fresh aroma, free from fuzzy by-notes.

FLORANOL — A chemical with a soft, slightly fruity Rose note, but with considerable power and stability.

Write for further information.
Investigate these additional VERONA specialties:

CYCLAMAL CYCLO ACETAL • DIMETHYL OCTANOL SPECIAL
RESEDALIA • VERONOL • ROSANOL

Sole representative in the United States for J. & E. Sozio, Grasse, France.

Resinoides Essential Oils Natural Absolutes

Write us for our complete list of specialties and other aromatic chemicals.

PRODUCTS BUILD SALES FOR *Your* PRODUCTS

Aromatics Division

VERONA CHEMICAL COMPANY

Plant and Main Office: 26 Verona Avenue, Newark, N. J.
1210 Rosedale Avenue, Chicago, Ill.

McKesson Labs Appoints

James J. Fielding Jr. has been promoted to merchandising manager of McKesson Laboratories to succeed the late Howard V. Phillips. Mr. Fielding was formerly assistant merchandising manager.

Paul E. Everett has been appointed manager of chain drug store sales. Mr. Everett, eighteen years with Peoples Drug Stores, Inc., where he was named "Manager of the Year" in 1949, subsequently operated a small chain of drug stores in Newport News, Va. and later became a laboratory representative for McKesson & Robbins.

J. W. Thomas, formerly sales manager of the company's Columbia, S. C. division, has been appointed manager of associated wholesaler sales.

Sterling Buys d-Con Co.

Sterling Drug Inc. has acquired the d-Con Co., Inc., Chicago, reportedly the world's largest manufacturer of rodenticides, it has been announced by James Hill Jr., Sterling's chairman of the board. The d-Con Co. has been dissolved and reorganized by Sterling under the same name.

Plans call for removal of the Chicago firm's executive and sales offices to Sterling's headquarters in New York. Frank A. Corbet, a divisional vice-president of Sterling's National Brands Division, has been elected president of the d-Con Co.

Eskenazy Assigned to L.A.

Improved service to customers in the Western United States is the aim of the Felton Chemical Company in transferring S. Eskenazy from the Brooklyn plant to the firm's Los Angeles branch. A perfume chemist of international reputation, Mr. Eskenazy joined Felton five years ago after working in South America and Europe.

S. ESKENAZY

The BIMS 25th Annual Dinner will be held February 28 at New York's Waldorf-Astoria. Eight of the ten-member committee which made arrangements for the affair are seen at a planning session. Standing, left to right: E. J. Moore, Richford Corporation; Joseph Higgins, General Artists Corporation; Peter L. Forsman, C. H. Forsman Company; Walter Nuckols, Swindell Brothers; and C. R. Keeley, Beauty Fashion. Seated, left to right: Douglas Haggerty, Kolmar Laboratories; Philip Heinle, John Robert Powers; and Norman Jones, Fritzsche Brothers, Inc. The two committee members not in the photograph are Don Leinbach, Crown, Cork & Seal Company; and Harry Griffiths, Pepsi Cola Company.

Assigned by C&C

Having completed their training at Mellon Institute of Industrial Research, the following have been assigned to sales offices of Carbon and Carbide Chemicals Company:

M. R. Carbone to the Los Angeles district, J. R. Conaway to the general sales office in New York, J. A. Francis to the St. Louis district, and A. F. Murray to the Pittsburgh district.

Carnrick Sales Manager

Burnett Maisel has been named sales manager of the G. W. Carnrick Co., according to Richard Sheldrick, vice-president of the company.

Drug Sales Agency

Peter D. Pankow, former sales manager for Fortune Sales, has established Pankow & Associates, 1405 North Luna Avenue, Chicago 51, a drug sales agency covering the Midwestern states.

ALLAN J. GREENE

Appointed by Shulton

Edmund Jackson Jr. has been appointed sales promotion and assistant advertising manager for the Toiletries Division of Shulton, Inc., it has been announced by Frank N. Carpenter Jr., vice-president of the firm.

Priscilla A. Marek and Sophie K. Roberts have been appointed as research chemists and Constance Bull as a formulation chemist, according to Sabbat J. Strianse, the firm's director of toiletries research.

Alfred Kozlowski has been appointed foreman for the Clifton, N. J. plant of Shulton's Fine Chemicals Division.

Seeland Is Penick V.P.

Election of Frank Seeland as vice-president of S. B. Penick & Company has been announced by S. B. Penick Jr., president. With the Penick organization since 1952, Mr. Seeland was appointed manager of the Agricultural Chemical and Insecticide Division in 1955. Under his leadership the division has expanded the scope of its operations and introduced such items as Sulfoxide, Ryania, Pro-Noxfish (R), and Warfarin.

Pfizer Administrative V.P.

Allan J. Greene, with Chas. Pfizer & Co., Inc. for eighteen years and director of commercial development since 1954, has been elected to the newly created post of administrative vice-president and as a member of the executive committee. He was elected to the board of directors in 1955.

Newly elected officers of the New York Chapter of the Society of Cosmetic Chemists: Left to right, treasurer, Vincent DeFeo of Dodge & Olcott, Inc.; ex-officio, William Lambert, American Perfumer; chairman, Warren Dennis, Shulton, Inc.; secretary, Miss Maria Wiener, Fluid Chemical Co., and chairman-elect, Harry Isacoff, van Ameringen-Haebler, Inc.

Newport Merged into Heyden

Assets of Newport Industries, Inc. have been acquired by Heyden Chemical Corporation, which has changed its name to Heyden Newport Chemical Corporation. Simon Askin, formerly president of Heyden, is president and chief executive officer of Heyden Newport. Armin A. Schlesinger, who was chairman of the board of Newport Industries, has been elected chairman of Heyden Newport. John P. Remensnyder, chairman of the board of Heyden Chemical, is vice-chairman of the Heyden Newport board.

Heyden and Newport had total sales of approximately $46,500,000 in 1955. For the first nine months of 1956 total sales were about $34,500,000; total assets in 1956: $60,000,000.

The Heyden board has been enlarged to include seven members designated by Newport in addition to the nine Heyden directors. The business of Newport will be continued under its present operating management as Newport Industries Company, a division of Heyden Newport. E. F. Sisson will be president and S. J. Spitz, executive vice-president of the division. Both Mr. Sisson and Mr. Spitz have also been elected vice-presidents of Heyden Newport.

The nine Heyden directors who will serve on the board of Heyden Newport include: Mr. Askin, Barrett Brown, V. A. Johnston, David G. McCornack, Arthur Minich, Mr. Remensnyder, Dr. Herman Sokol, Henry G. Walter Jr. and George M. Wells.

The seven former Newport directors elected to the board of Heyden Newport are Allan D. Emil, F. W. Magin, J. H. McCormack, A. S. McGregor, Mr. Schlesinger, Mr. Sisson and Mr. Spitz.

Heads Bacteriologists Group

Dr. Philip C. Eisman, director of bacteriological research at Ciba Pharmaceutical Products Inc., has been re-elected president of the New York City branch of the Society of American Bacteriologists, it was announced January 15 at the annual luncheon and scientific meeting of the branch in the Hotel Statler, New York.

Morningstar-Paisley Opens Toronto Office, Warehouse

Morningstar-Paisley of Canada, Ltd. has established a new Toronto office and warehouse at 207 Queens Quay West, it has been announced by George J. Muller, president of Morningstar, Nicol, Inc. and Paisley Products Incorporated, parent companies of the Canadian firm. Telephone number of the new office and warehouse is EMpire 6-0848.

Robin T. Hazell has been appointed sales and service representative with headquarters at the Toronto office. He will specialize in the starch, dextrine, and natural gum products of the Morningstar line. Warehouse stocks of the company's products will also be established at Montreal.

Plans for the near future include producing in Canada the full line of Paisley liquid vegetable, casein, animal glue and polyvinyl resin adhesives. Mr. Hazell will introduce the current crop of St. Vincent Arrowroot to Canadian users.

Snell, Inc. Expands

Dr. Foster Dee Snell, president and chairman of Foster D. Snell, Inc., consulting chemists and chemical engineers, has announced the purchase of Seil, Putt and Rusby, Inc., chemical consultants, New York. Dr. Stephen S. Voris, president of Seil, Putt and Rusby, will join the parent organization as director of the new subsidiary. All other employees will also join Snell.

Robert Blomquist, second from left, J. T. Baker Chemical Company representative, is being presented with a certificate of recognition by Ralph A. Clark, vice-president in charge of sales, for his achievement during Baker's recent sales contest. Dr. Joseph R. Stevens, left, executive vice-president, and G. B. Hafer, sales manager, Chemical Laboratory Division, join in congratulating Mr. Blomquist. They later presented him with a refrigerator.

VICTOR PIZZOLATO

ROY HAGELIN

WILBUR F. YOUNG III

Promote Victor Pizzolato

Victor A. Pizzolato has been promoted to product manager for toiletries at Lehn & Fink Products Corporation, according to O. G. (Red) Kennedy, general manager of the Lehn & Fink Sales Division.

Joins Lightfoot Schultz

Victor Levinson, veteran of 35 years in the soap industry, has joined the Lightfoot Schultz Company, according to B. L. Marks, vice-president and general manager.

Mr. Levinson, formerly general manager of J. Eavenson & Sons, which liquidated its business recently, will act as sales executive and will personally handle accounts which had been serviced by Eavenson.

Godshall Retires

Dr. Henry S. Godshall has retired as assistant vice-president of Strong, Cobb and Company, Inc., John N. Eustis, president, has announced. Dr. Godshall, who has completed twenty years service with Strong Cobb, will continue as consultant to the firm.

Neumann-Buslee & Wolfe Rep

Earl H. Davies has been appointed West Coast representative for Neumann-Buslee and Wolfe, Inc. He will headquarter at 527 East Union Street, Pasadena 1. Telephone: SYcamore 3-0884.

A.A.A.S. Vice-President

Dr. Robert C. Anderson of Eli Lilly and Company has been elected a vice-president of the A.A.A.S. and chairman of the Pharmacy Section for 1957.

Joins Max Factor & Co.

Herbert Warne has been appointed assistant purchasing agent of Max Factor & Co., according to Max Factor Jr., president.

Hagelin Ungerer Sales Mgr.

Roy Hagelin has been appointed sales manager of Ungerer & Company, it has been announced by Kenneth G. Voorhees, president. Associated with the essential oil industry for more than twenty-five years, most recently as a staff member of Sunkist Growers, Inc., Ontario, Calif., in charge of citrus oil sales and technical services, Mr. Hagelin will make his headquarters at Ungerer's main office, 161 Avenue of the Americas, New York.

Shulton Canadian Subsidiary

Formation of a subsidiary in Toronto to be known as Shulton of Canada Limited has been announced by George L. Schultz, president of Shulton, Inc. George M. Thomson, manager of Shulton's Canadian branch, has been named a vice-president and general manager of Shulton of Canada Limited.

Elected Luft Vice-President

Irving P. MacPherson Jr. has been elected vice-president in charge of domestic and foreign sales, and a director, of the George W. Luft Co., Inc., according to Constance Luft Huhn, chairman of the board. Mr. MacPherson was formerly vice-president and director of marketing for Warwick and Legler, Inc.

Gillette Acquires Harris Labs

The Gillette Company has acquired Harris Research Laboratories, Inc. Gillette has been one of the Washington, D. C. research company's principal industrial clients for over ten years.

Ames Asst. Adv. Mgr.

Appointed assistant advertising manager of the Ames Company, Inc. is William H. Wigstone.

Caswell Elected Chairman

Harry H. Caswell, treasurer and general manager of W. F. Young, Inc. since 1919, when the company was incorporated, has been elected chairman of the board. Wilbur F. Young III, who has been promoted to fill the vacancy created by Mr. Caswell's election, represents the third generation in the firm. His grandfather founded the company, and his father was active in its management.

Sees Arner Sales Rise in '57

Expanded manufacturing and research facilities will help Arner Co. register a 15 to 20 per cent sales increase of private formula drugs in 1957, Dr. Niels C. Klendshoj, president, has stated.

He foresees a stepped-up competitive pace in the drug industry this year, with greatest rewards going to those companies first on market with new and improved drugs. More efficient production methods and inventory control, coordinated with large scale research programs, will be the keys to meeting stiffer competition, he said.

Promoted by Ciba

Lewis A. Coleman Jr. has been promoted to hospital-research associate in the Atlanta territory of Ciba Pharmaceutical Products Inc., and Eugene O. Gracey has been promoted to the same position in the New Orleans territory, it has been announced by Vincent A. Burgher, sales vice-president.

On Stokes Fields Sales Staff

Ronald W. Schmidt has joined the field staff of F. J. Stokes Corporation and has been assigned to the firm's district office in Union, N. J. to serve customers in the northern New Jersey area.

THE CHINESE MERCHANT PRINCE

In a far-off land a merchant prince by the name of Fray Grins had received all three blessings . . . he was wealthy, healthy and wise. His sons went to the best schools, his daughters married the most eligible men, his wife had the most sparkling jewels, and he, himself, collected rare editions of esoteric books.

Fray Grins' wealth came from the manufacture and sale of perfumes. His packages were masterpieces, his perfumes were known throughout the world,and the wealth of Fray Grins, like the proverbial Break-The-Bank, grew and grew, and grew. But all things must end and so, too, did his life at the august age of eighty four less two moons. His eldest son took over and decided that profits must be larger. A little less perfume here, a little cheaper oil there and "qui sait" as the French say.

The firm of Fray Grins no longer bought from the best houses. Then they no longer bought from any house—they went out of business. And the sparkling jewels and the rare editions were sold to the highest bidders.

• • •

If there be a moral to this tale we would conclude that it is "Shortcut in Quality is False Economy". . . Yet we would be bold to say that at Syntomatic we feel there is a practical parallel in combining top quality with true economy. Prove it? Our pleasure . . . Syntomatic Corporation, 114 East 32nd Street, New York 16, New York. MUrray Hill 3-7618.

Cosmetic Seminars

Various aspects of cosmetic chemistry will be presented in an eight-week series of seminars to be given at St. John's University College of Pharmacy, Brooklyn, N. Y., on Tuesday evenings starting March 12. The leading authorities in the cosmetic industry who will lecture at these seminars are: Dr. Irving Shapiro, dermatologist, Skin and Skin Preparations; Dr. Everett L. Saul, Bristol - Myers Company, and Dr. Samuel Zuckerman, H. Kohnstamm Company, Perfumes and Colors in Cosmetics; Dr. Donald H. Powers, Warner-Lambert Pharmaceutical Company, and William Markland, Breck, Inc., Permanent Waving Materials and Shampoos; Dr. Paul G. I. Lauffer, George W. Luft Company, Lipsticks and Facial Make-ups; Sabbat J. Strianse, Shulton, Inc., Cosmetics for Men; Dr. Emil Klarmann, Lehn & Fink, Deodorants and Sunburn Preventives; Victor DiGiacomo, Givaudan-Delawanna, Aerosols in Cosmetics; Dr. Babu Patel, E. Fougera & Company, Stability Testing of Cosmetic Formulations; Dr. Kenneth Russell, Colgate-Palmolive Company, Dentifrices; and Pierre Bouillette, Givaudan-Delawanna, How Perfumes Are Made.

Vanilla Bean Assn. Officers

W. H. Triest of Zink & Triest Co. was elected president of the Vanilla Bean Association of America at the association's annual meeting and banquet, held January 11 at the Gramacy Park Hotel, New York. E. Vina of Thurston & Braidich was elected vice-president; J. Manheimer of J. Manheimer Essential Oils, treasurer.

Directors elected were J. Schmidt of Dammann & Co., Inc., J. R. Maxwell of Camax Co. and H. Salomon of F. Huber Co.

Architect's drawing of Atlas Powder Company technical center.

New York Rep for Emery

George R. Williams has been appointed sales representative in the New York City area, R. F. Brown, sales manager of the organic chemical sales department of Emery Industries, Inc., has announced.

GEORGE R. WILLIAMS

Martin H. Smith Elects

Herbert E. Halliday, executive vice-president of Martin H. Smith & Co., has been elected to the firm's board of directors. Robert C. Foy has been elected secretary-treasurer of the company.

Atlas Technical Center

Atlas Powder Company broke ground January 17 for a $3,000,000 technical center, which will enable the company to intensify its long-range basic research program and to expand its technical service to the drug and cosmetic industry. To be located adjacent to the company's general offices near Wilmington, Delaware, the center is scheduled for completion by the end of this year.

In ground-breaking ceremonies, Delaware's Governor J. Caleb Boggs removed the first spadeful of earth, with Atlas President Ralph K. Gottshall using a pick-ax to assist.

Mr. Gottshall said the center is the latest step in current expansion of the Atlas research and development program, which includes an intensification of long-range research as well as applications research and customer service. Within the next few years, he said, Atlas plans to approximately double its research and development strength.

The technical center will provide extensive facilities for work across the entire range of applications served by Atlas products, including sorbitol, emulsifiers, detergents, polyester resins, activated carbons and explosives.

Following completion of the new center, technical studies and product development activities now being carried on at the company's central research laboratory at Atlas Point, Delaware, will be transferred to the new building, along with personnel of the company's research and product development departments who are now located in the general offices.

The company's chemical engineering department, which now operates pilot plant installations at the central research laboratory, will take over all of that facility after the other departments move. No production or pilot plant work will be done at the center.

Schering Corporation's new $1,500,000 biological research laboratory, dedicated January 24, will house the pharmacology, biochemistry, and veterinary medicine departments. Located on Peloubet Street in Bloomfield, N. J., the laboratory faces the company's administration building.

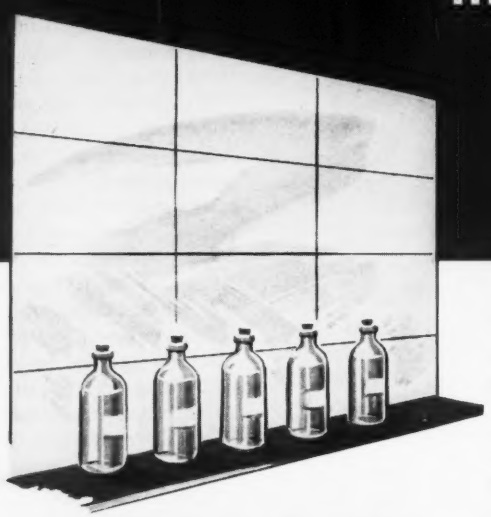
now... in White Oils

Penn·Drake assures

greater

light stability

than ever before!



Light exposure tests are now being replaced by an accurate, scientific evaluation of light stability. Spectrophotometric measurements by Penn-Drake allows detection of impurities as little as 2 to 3 parts per million.

The ultraviolet absorption spectrum gives us a reliable quantitative measure of minute impurities in White Oils which heretofore defied detection during ordinary analysis. Using this new tool, we are able to produce White Oils with the highest order of light stability and purity yet attainable.

Write for 20-page article on Spectrophotometric Control

Penn-Drake® WHITE OILS

PENNSYLVANIA REFINING COMPANY
BUTLER, PENNSYLVANIA
Branches: Cleveland, Ohio and Edgewater, N.J.

JEAN W. BAER

Bland Is General Sales Mgr.

Appointment of John Bland as general sales manager of the Eastern Division of Angelique & Co., Inc. has been announced by Charles N. Granville, president of the firm. Prior to joining Angelique in 1946, Mr. Bland had served thirteen years with the RAF as a wing commander.

Three salesmen have been added to Mr. Bland's territory: Dana Rhines, Bob Howe, and Bob Hoehl.

Alcolac Research Chemist

Dr. Herbert Weiss has joined American Alcolac Corporation as a research chemist in the commercial research laboratory.

Bombay Gen. Mgr. for P,D

James J. Keane has been appointed general manager of the Bombay, India branch of Parke, Davis & Company, succeeding W. G. Lloyd, who retired after more than 40 years with the company.

Becco Chemical Sales Mgr.

Dewey H. Nelson, formerly assistant to the sales manager of Becco Chemical Division, Food Machinery and Chemical Corporation, has been promoted to sales manager, it has been announced by Frederick A. Gilbert, president of Becco. Mr. Nelson succeeds the late John F. Shea, who was vice-president in charge of sales at the time of his death.

An Army Air Corps pilot during World War II, Mr. Nelson joined Becco in 1947, working first in the company's special products department and later in the research department. He was transferred to the sales department in 1951, and in April, 1953, became Midwest district manager in Chicago, from where he returned to Becco's Buffalo headquarters in August, 1956, as assistant to the sales manager.

Isotron Plant Completed

With completion of a major plant addition at Pennsalt Chemicals' Calvert City, Ky. works, the company is ready to introduce its new line of aerosol propellents and refrigerant gases—Isotrons. Pennsalt President William P. Drake has announced that a second Isotron unit is under construction and scheduled for completion later this year. Both projects are part of a $55 million expansion program.

Jean W. Baer and John H. Haslip have been appointed to the Isotron sales staff, according to an announcement by Frank A. Lucard, Isotron sales manager. Both men will sell propellants under the direction of Supervisor Wiley J. Pickett. Mr. Baer will represent Pennsalt in the Northeastern area with headquarters in New York City. Mr. Haslip will work out of his headquarters in Chicago.

Alfred L. Young Retires

Alfred L. Young retired January 31 as vice-president and a member of the board of directors of Eli Lilly International Corporation. A pioneer in laying the groundwork for Lilly's export and overseas organization, he traveled a half-million miles in his 29 years with the company.

Du Pont to Build New Plant

Plans for construction of a new plant to manufacture refined as well as technical grades of Sodium CMC at Du Pont's Carney Point Works in New Jersey have been announced by the company.

Named by Haver-Lockhart

Stephen F. Donahue has been named purchasing agent for the Pharmaceutical Division of Haver-Lockhart Laboratories, replacing Bernie Finucane, who has transferred to the firm's sales department.

DEWEY H. NELSON

JOHN H. HASLIP

Gelsthorpe Back at B-M

Edward Gelsthorpe has returned to Bristol-yers Products Division as assistant vice-president and director of merchandising, according to E. Lloyd Bernegger, executive vice - president. Mr. Gelsthorpe was formerly associated with Bristol-Myers in the same capacity before leaving the company to join J. Walter Thompson Co.

Sterling Promotes Two

R. L. Graham and Wesley F. Tibbetts have been promoted to assistant managers of chain store sales in the National Brands Division of Sterling Drug Inc., it has been announced by J. N. Cooke, vice-president in charge of marketing and sales promotion.

Mrs. John Breck Sr.

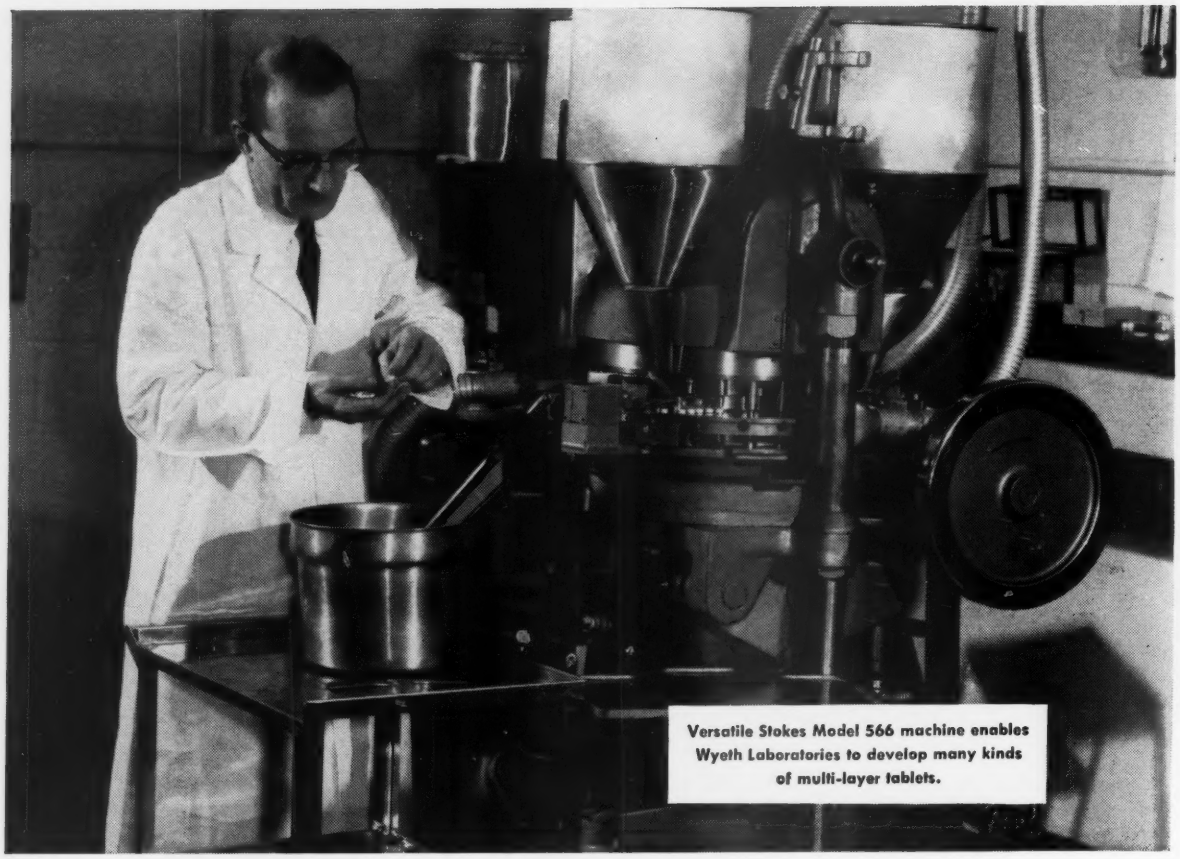
Mrs. Elizabeth Pratt Breck, wife of John H. Breck Sr., founder and chairman of the board of John H. Breck, Inc., died January 5 in Mercy Hospital, Springfield, Mass.

In addition to her husband, she is survived by two sons, Edward J. and John H. Jr.; two daughters, Miss M. Constance Breck and Mrs. Marion Sullivan; and a sister, Miss Ellen Pratt.

Dr. Ferdinand W. Breth

Dr. Ferdinand W. Breth, 70, vice-president and technical director of L. Sonneborn Sons, Inc., died January 8 of a heart attack on the way to a hospital.

Born in Bohemia, he worked in various oil refineries in Europe before coming to the United States in 1915 as a newspaper correspondent. During World War I he served in the Middle East with the Jewish Legion of the British Army. Upon returning to the United States, he became associated with the Sonneborn firm.



Versatile Stokes Model 566 machine enables Wyeth Laboratories to develop many kinds of multi-layer tablets.

Wyeth explores new ideas in multi-layer tablets...

Stokes multi-layer tabletting press used to combine incompatible ingredients, create vari-colored effects at Wyeth Laboratories Research Institute.

Product development people at Wyeth Laboratories are carefully looking at new products that are now made possible by Stokes' development of a practical, precision production machine for multi-layer tablets. On a Stokes Model 566 multi-layer machine, they are working out many new ideas that may soon become new items in their product line:

Combining incompatibles. The multi-layer technique permits ingredients that cannot be blended together for conventional tabletting methods to be made into a single tablet, with incompatible materials separated into layers. It offers an ideal solution to combining incompatible materials for increasing or controlling effectiveness of certain drugs.

Special color effects. Various color combinations of layers can be used for identification, or for novelty appeal in children's medicines.

Individual layer pre-compression, in the Stokes presses, gives clean line separation and highly accurate control of weight in each layer. Weight tolerances of 1% or better are readily maintained. It's easy to check weight of each layer while the machine is operating. Three layer presses can be easily set to produce two-layer or conventional tablets.

Stokes Model 566 multi-layer tablet machines use standard BB-2 punches and dies. For full facts, write to Stokes today, or contact your nearby Stokes tabletting representative.

Pharmaceutical Equipment Division
F. J. STOKES CORPORATION
5535 Tabor Road, Philadelphia 20, Pa.

STOKES

Management Forum

by Francis Chilson
INDUSTRIAL CONSULTANT

Management Development

Everyone admits there is a shortage of technical brains and executive brains. All sorts of schemes are advanced to meet the shortages, which will become still more acute as industry grows larger, more complex economically and more technical. But the schemes I have read about are hit-and-miss affairs dealing with one or another eschelon of management. All kinds of definitions are given for "management" and an equal number are given for "responsibility."

I think management is one thing and it means responsibility for something. In some departments and in some businesses responsibility can mean totally different things. In some areas responsibility means control and direction of manual workers and the degree of responsibility of each manager is measured by the number of workers under his direction. In another department of the same business or in another business the degree of responsibility may be measured by the value of materials under a particular individual's control. In still other instances responsibility may be determined by the value or complexity of the equipment under an individual's control. For instance a paper maker may have not more than a dozen helpers on three shifts but the equipment under his control may be worth six or eight million dollars and even momentary interferences with continuous operation means thousands of dollars in lost tonnage. In other instances the risk involved in production, as in making biological products or explosives, may be the determining factor.

Different industries can set up norms for the selection, training, compensation and advancement of management personnel particularly when these industries are relatively simple, mass production units. But the problem is not so simple in the pharmaceutical industry where all the elements of labor control, material value, equipment value, complexity and risk may all be present in the same plant.

In addition to areas and type of responsibility other factors are important:—technical training, years of experience, performance, diligence, attitude, aptitude, intelligence, aggressiveness and personality.

I am convinced that point values can be assigned to particular qualifications and that if rating factors are assigned to each point it is possible to evaluate on the same basis areas of responsibility with individual qualifications. We have always the problem of evaluating men whose qualities and qualifications vary all over the lot. Most of us do it by hunch and hope to God we're right. We have not only the problem of compensating men equitably who have totally dissimilar areas of responsibility; we have the problem of choosing and training these men for advanced areas of responsibility. Management should well up from the bottom as much as possible.

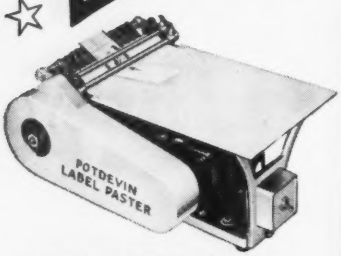
On Warehousing

I am often asked the question: "What part of a factory needs expansion first?" The answer is: "Some phase of the warehouse; usually that dealing with packaging materials." I think this is particularly true in the cosmetic industry where seasonal and Christmas business creates abnormal demands for temporary warehouse space, not only for incoming materials but for finished stock as well. Sometimes this finished stock must be held for several months before it can be shipped.

It would seem therefore that I have not been consistent in insisting that warehousing be arranged so that it can be absorbed by expanding process and packaging departments. I do insist upon this arrangement for one reason: expansion requirements for manufacturing or packaging departments never require great gobs of space all at once. You need a few hundred feet now; a few thousand then. As an almost invariable rule managements will not permit new construction in such small increments, but if ware-

☆FREE TRIAL OFFER!

See for yourself how POTDEVIN LABELING MACHINES Save time, increase efficiency!

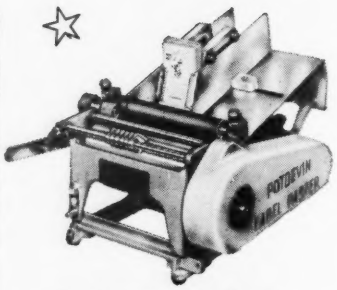


Hand and Motor Driven

LABEL PASTERS

Handles any shape label without adjustment. Dial control regulates paste flow—no excess. Cuts stock loss. One machine can supply several operators. Available in 6" and 8½" models.

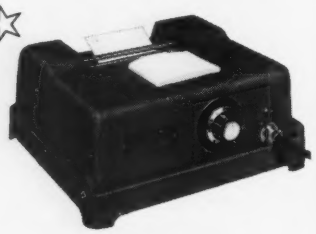
POTDEVIN has been serving the labeling needs of the Drug and Cosmetic manufacturers for over 60 years. Hundreds of plants use POTDEVINS for short runs or for auxiliary use so as not to disturb mass production set-ups. If you still use hand labeling for short runs investigate POTDEVIN today! POTDEVIN will send you a labeling machine on *FREE TRIAL. This is the most convincing way to see for yourself how great a time and money-saver a **POTDEVIN** can be.



Semi-Automatic Feed

LABEL PASTERS

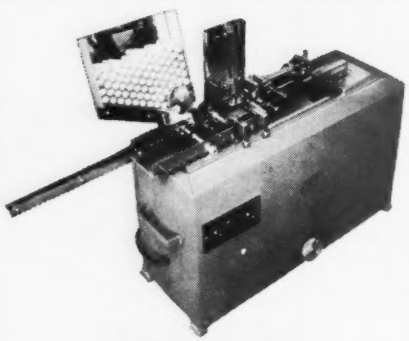
Quickly adjustable to all shapes of labels from ½" to 7½" wide. Dial regulates paste flow. Speeds-up production 50%.



Thermoplastic Label

ACTIVATORS

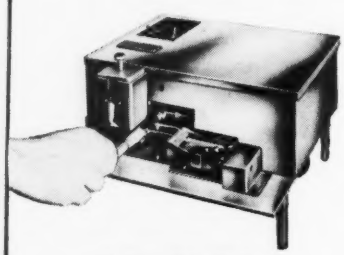
Activates delayed tack, pre-coated labels quickly and evenly. Permanent labeling on glass, metal, plastic, fabric, etc. Thermoplastic heating control. Available in 6" and 12" widths, motor driven.



Vial and Ampule

LABELER and CODER

Completely automatic labeling and coding of vials and ampules. Available in 1, 2, 3, 5 and 10 c.c. sizes.



Collapsible Tube

LABELERS

Applies up to 32 slip labels per minute to collapsible tubes. Automatically forms and ejects label on tube. Machines available for ⅛, ¼, ½ and 1 oz. tubes.

POTDEVIN MACHINE CO.

257 NORTH STREET TETERBORO, N. J.

ESTABLISHED IN 1893 POTDEVIN

Specializing in Labeling Machines for over 60 years

house space is contiguous to and parallel with the operating departments, it is always possible to pinch off a bit of warehouse space adjacent to the operating departments. In this way operating departments can expand as the need arises in an integrated manner without separation of like functions. When warehouse areas need expansion, large chunks of space usually are needed and management doesn't mind building a large area when it has to.

However, I don't know how long it will be possible to continue this form of construction because building costs are still skyrocketing and it is rapidly getting to the point where solid, permanent construction for warehousing purposes is too expensive and we may have to utilize the cheapest possible type of construction for warehousing purposes. We may then be forced into a position where we can no longer envisage the use of warehouse space as available for the expansion of production and packaging facilities.

New Management Technique

I am starting a course in the sign language. Undoubtedly this will be the greatest boon to management since the invention of the alphabet. I have listened to so much chitchat during my career that my ear drums are lame. So in order to keep conferences on the beam and to minimize the enormous waste of time now involved in inhaling and exhaling hot air, I have decided to introduce the sign language as a conference technique. The sign language requires conciseness and brevity. It will allow of no interruptions or diversions. It automatically limits the length of a conference because one's fingers get tired. You all know the meaning of the famous slogan: L.S.M.F.T. In spite of all the work that has been done on anatomy it has remained for me to discover that the tongue is the only muscle that never gets tired. It works even when it is limp. In fact it works better.

Sharples Dry Powder Classifier

A new high capacity classifier that effectively increases the precision with which fine powdered materials may be divided by particle size, was demonstrated for the first time at the mill-size demonstration plant of The Sharples Corporation. Known as the Super Classifier, this optimum air vortex classifier provides heretofore unobtainable efficiencies in classifying a broad range of dry powders produced by the chemical, pharmaceutical, cosmetic, cement, gypsum, food, paint, abrasives, mining, and other industries.

Available in four sizes with capacities ranging from approximately 1000 lbs. per hour to 30,000 lbs. per hour, the Super Classifier provides an ultra-sharp cutpoint at high capacity regardless of feed rate or size distribution in the feed. For example, fine fractions with a top size in the range of 15-20 microns will contain less than 0.01-0.04 per cent 325 mesh screen residue. In addition, product recovery (yield) is considerably higher than by any other means; exact percentages vary with the density of the powder, cutpoint desired, etc. Actual production runs on talc have been made with over 97 per cent yield at a top size of 15 microns.

This exceptional combination of sharp cutpoint, high capacity, and high yield is the result of designing the Super Classifier to produce the ideal conditions inherent in air vortex principle. Several essential factors have been carefully controlled: the powder is brought up to the speed of the air vortex before it is fed into the classification zone, which assures that every particle is preconditioned ready for classification; frictional effects are largely eliminated, since both top and bottom plates of the classification zone rotate at the same velocity as the air; a constant cutpoint is maintained throughout the classification zone by means of converging specially shaped plates which increase air velocity as the air progresses from the outside to the inside—thus maintaining a constant relationship between centrifugal force and drag force.

Careful attention has been given to the design and construction of the Super Classifier to minimize the effects of abrasion and wear. In the few places where high velocity exists between the powder and contacting walls, such as powder feed tubes, readily replaceable inserts are provided for economical maintenance. A high strength completely sealed spindle eliminates the possibility of particles entering that assembly.

Because the Super Classifier applies the air vortex principle at optimum conditions to effect precision classification, operational adjustments are not necessary. A change in desired cutpoint can be made quickly and easily merely by inserting different air vane sets. As a result cutpoint will not vary during a run.

The Super Classifier is designed to classify effectively particles in the range of 10 microns to 125 microns, average size, depending upon the specific gravity of the material.

Extremely small and compact in relation to its high capacity, a Super Classifier with a nominal rating of 10,000 lbs. per hour capacity, for example, occupies about the space of an office desk. In a typical production set-up, the powder is fed into the Super Classifier from a vibratory feeder. After classification, the fines fraction is carried by the exhauster air stream to a collector; the coarse fraction is carried out through the air lock of the classifier, from which it is either returned to the mill for re-grinding or is collected as product (For inert gas operation, the clean gas discharge from the exhauster is returned to the classifier.)

Operation of the Super Classifier is continuous, and once a run is started a minimum of operator attention is required. Instrumentation is simple and inexpensive, consisting only of a measurement of air flow rate and the pressure differential across the system.

The Sharples Corporation maintains a mill-size classification plant where test and demonstration runs are made on powdered materials under the super-

2 NEW POWDER FILLERS

for

LOW and MEDIUM SPEEDS

VACUFLOW JR.

Single head semi-automatic machine for filling wide range of free flowing and non-free flowing materials. Its low initial cost and dependable, versatile operation makes it a "natural" for the producer of "low volume" items.

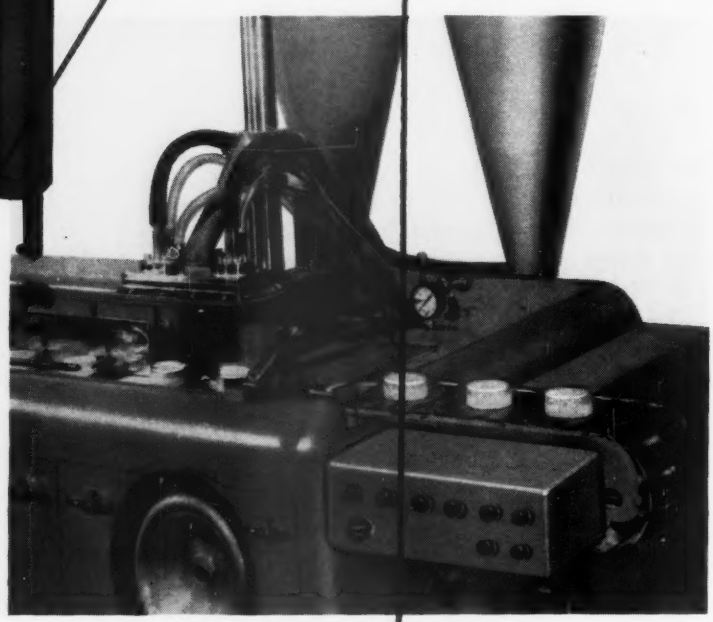
Electric timing devices and solenoid valves permit excellent control of speed and density of pack. Filling cycle can be changed when required from alternating vacuum pulses to non-alternating system. Once set the cycle is completely automatic and constant, repeating exactly as attendant steps on pedal.

Rigid and non-rigid containers may be handled on Vacuflow Jr. including bottles, jars, metal end canisters, powder boxes and conventional "squeeze" bottles.

Standard model takes sizes up to 6" high.

Full changeover, including replacement of filling head and shroud, may be done in less than 10 minutes. Unit comes fully equipped with vacuum power plant and filter system.

WRITE FOR COMPLETE INFORMATION



DUO-VAC

Fully automatic powder filler for both rigid and non-rigid containers with variable speed control to permit range of 15 to 40 containers per minute.

Incoming containers are spaced and moved through machine by means of a rotating dial and synchronized transport mechanism. Containers remain on conveyor level as filling heads automatically lower to seal and fill by standard Vacuflow system — the method which alternates pressure several times during cycle so as to pack the powder as desired and, at the same time, keep screen sections clean for proper operation.

Unit handles containers ranging from 1½" to 6" in diameter and from ¾" to 8" in height. When no shrouding is involved, much taller containers may be run.

PNEUMATIC SCALE CORP., LTD., 70 Newport Ave., Quincy 71, Mass. *Also: New York; Chicago; Dallas; San Francisco; Los Angeles; Seattle; Leeds, England. Canadian Division: Delamere & Williams Company, Ltd., Toronto.*

★PNEUMATIC

Packaging and Bottling Equipment

vision of operating and process engineers. Equipment in the plant includes Super Classifiers, vibratory feeders, exhausters, collecting systems for fines and coarse fractions, and other auxiliary equipment and instrumentation necessary to conduct runs under actual mill conditions.

Results are verified by means of the Sharples Micromerograph. This extremely accurate instrument was developed by Sharples during the course of designing the Super Classifier. It provides reproducible particle size distribution analyses, accurate to within three per cent, in as short a time as 15 to 20 minutes. Requiring no special technical skill, it is easy to operate, and is fast becoming the standard instrument for particle size distribution analysis.

Office Jargon

GIVE US THE BENEFIT OF YOUR PRESENT THINKING—We'll listen to what you have to say as long as it doesn't interfere with what we've already decided to do.

WE WILL ADVISE YOU IN DUE COURSE—If we figure it out, we'll let you know.

TO GIVE SOMEONE THE PICTURE—A long, confused and inaccurate statement to a newcomer.

Automatic Air Filter and Sterilizer

Sterilized and filtered air is now readily available in Britain at the flick of a switch controlling a small portable machine operated from the domestic electric supply. The unit, which has been patented in England by Messrs. Penfold & Partners, Consultants for Motor and Autofreezer Corporation, sterilizes by irradiation of incoming air with short-wave energy of 2537 A units wavelength.

The machine operates by means of a fan which draws room air into one end of the tube through special filters. The irradiation produced within the machine attacks the cell structure of micro-organisms in the air and the sterilized air is then delivered back into the room from the other end of the tube.

The unit is highly effective against mold, fungus spores, wild yeast, and bacteria; recent laboratory tests showing kills of up to 95 per cent.

Colton Multiple Liquid Fillers

Four new models of bench-type multiple liquid fillers have been added to the Colton "100 Series" line of multiple liquid-fillers made by Arthur Colton Company, 3400 East Lafayette, Detroit 7. These fillers are equipped with the new Colton patented metering cylinder and valve assembly that provides extremely accurate volumetric filling to within less than one per cent variation.

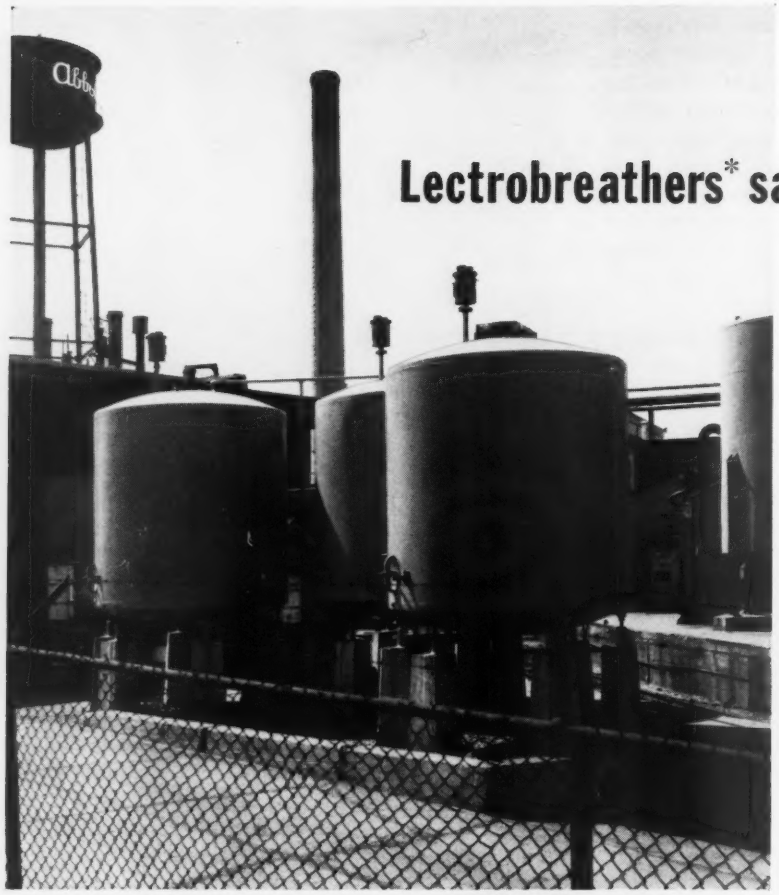
They will fill glass or plastic bottles, jars or cans. Containers can be fed across the front of the fillers or fed through with a rack. A straight line production conveyor and bottle escapement mechanism is available for applications where production requirements are high.

Kangaroo balloon hovers above Aspro House of Nicholas Pty, Ltd., Melbourne, Australia, with a packet of Aspro in its pouch, a gesture of good will and welcome for visitors to the Olympics.

The fillers are made in four standard models: the Model 104A with four filling nozzles, the Model 106A with six nozzles, the Model 108A with eight nozzles and the Model 112A with 12 nozzles. Individual suction lines are provided for each filler assembly, thus enabling one color of liquid to be fed to all containers, or a different color to be fed to each containers. Manifold nozzle designs are available for each of the models which will increase significantly the maximum fill per nozzle.

The Model 104A filler has a maximum fill of four fluid-oz. per nozzle and a maximum fill rate of 160 fills per minute. The Model 106A filler has a maximum fill of four fluid-oz. per nozzle and will deliver up to 240 fills per minute. The Model 108A filler has a maximum fill of 1.3 fluid-oz. per nozzle and will produce up to 320 fills per minute. The Model 112A filler has a

The new Model 106A Colton bench-type multiple liquid filler.



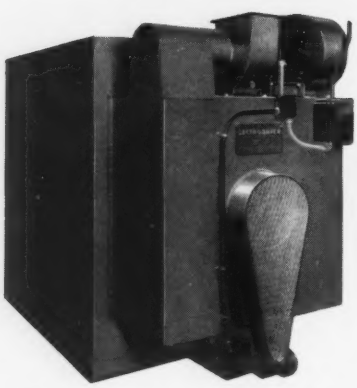
You see Lectrobreathers extending above tanks and rooftops at the Abbott Laboratories plant in North Chicago, Illinois.

Lectrobreathers* safeguard chemicals in storage—permitting carload purchases

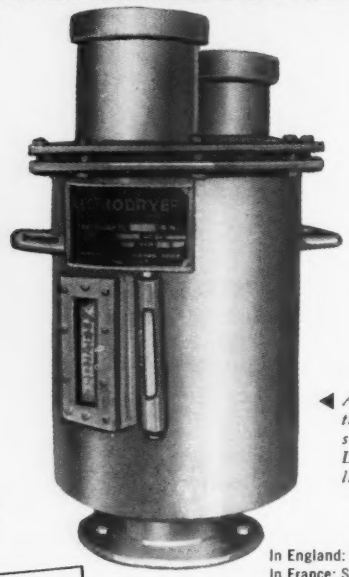
● Buying liquids in tank car lots saves money. But profits are quickly washed out if storage tanks are allowed to inhale wet air as they breathe, contaminating their contents.

Abbott Laboratories solved this problem by installing Lectrobreathers on many of their outdoor and indoor storage tanks. Now, as pressures vary and those tanks draw in outside air, that air is DRY. The original high quality of their contents is preserved.

Lectrobreathers and Lectrodryers make certain that any tank, little or big, breathes only DRY air. For help in selecting the equipment you need, write Pittsburgh Lectrodryer Company, 309 32nd Street, Pittsburgh 30, Pennsylvania (a McGraw Electric Company Division).



Where volumes of air are large, as in a tank farm, a Lectrodryer serves as a breather. Its DRYing-reactivation cycle is continual, so it stays right on the job.*



◀ *A tank breathes freely as air passes through the Activated Alumina adsorbent and is dried DRY. When a Lectrobreather needs reactivation, it is lifted off and a spare takes its place.*

In England: Birlec, Limited, Tyburn Road, Erdington, Birmingham.
In France: Stein et Roubaix, 24 Rue Erlanger, Paris XVI.
In Belgium: S. A. Belge Stein et Roubaix, 320 Rue du Moulin, Bressoux-Liege.

LECTRODRYERS DRY WITH ACTIVATED ALUMINAS

LECTRODRYER

* REGISTERED TRADEMARK U.S. PAT. OFF.

maximum fill of 0.32 fluid-oz. per nozzle with delivery up to 480 fills per minute.

By manifolding, capacity per nozzle can be increased up to 16 fluid-oz. with a single nozzle on the Model 104A with a resultant rate up to 40 fills per minute. Other models can have fill per nozzle proportionally increased by manifolding combinations.

The new fillers occupy a bench area about 18¾-in. by 33-in. and are 24-in. high overall.

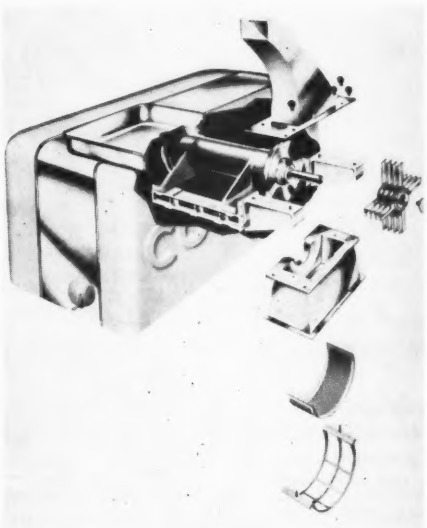
Gisholt Packaging Show Display

The Sealamatic automatic neck band applying machine, manufactured by the Gisholt Machine Company, 1245 East Washington Avenue, Madison 10, will be demonstrated at the National Packaging Conference to be held April 8 to 11 in Chicago. It will be in continuous operation during the show. Pre-cut cellulose neck band seals will be automatically applied at speeds ranging from 50 to 150 bottles per minute.

The company's newly developed, in-line bottle spotter unit will also be offered.

Impact-in-Air Comminutor

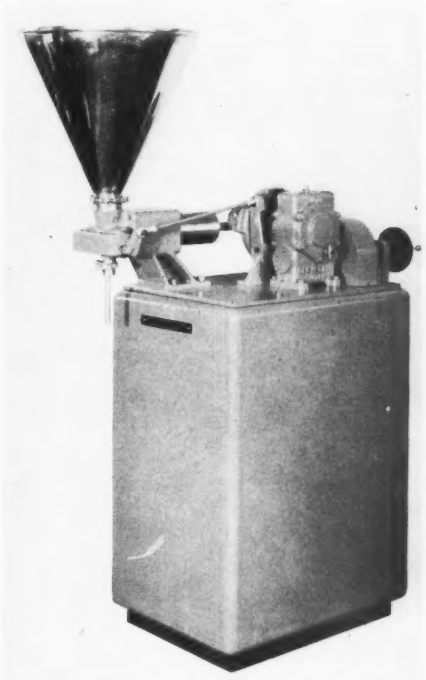
The Cog Corporation, 4441 W. Lake Street, Chicago, announces new features in its impact-in-air comminutor. The photo shows the "snap-apart" construction of all functional parts to permit rapid and thorough cleaning, rotor reversible on splined shaft for dual purpose blades or extra blade life, overall construction based on sub-assemblies which provide minimum maintenance, maximum accessibility and many combinations in one basic unit. A rugged spindle is supported in an integral line-bored housing for life-long alinement of bearings. Extra safety factors are designed into all parts to permit continuous round-the-clock operation. The enclosing modular housing permits easy housekeeping and provides eye appeal to match the most modern plant installation.



Designed for continuous processes where needed, the variations include units for size reduction of wet as well as dry products, spray-blending of dry and wet ingredients for intimate blending on a continuous basis while maintaining accurate formula ration as well as continuous and intensive blending of several dry ingredients in whatever ratio needed.

Kiefer Redesigns Mono Piston-Filler

The Karl Kiefer Mono-Piston accurate Filling Machine has been redesigned with a modern sanitary

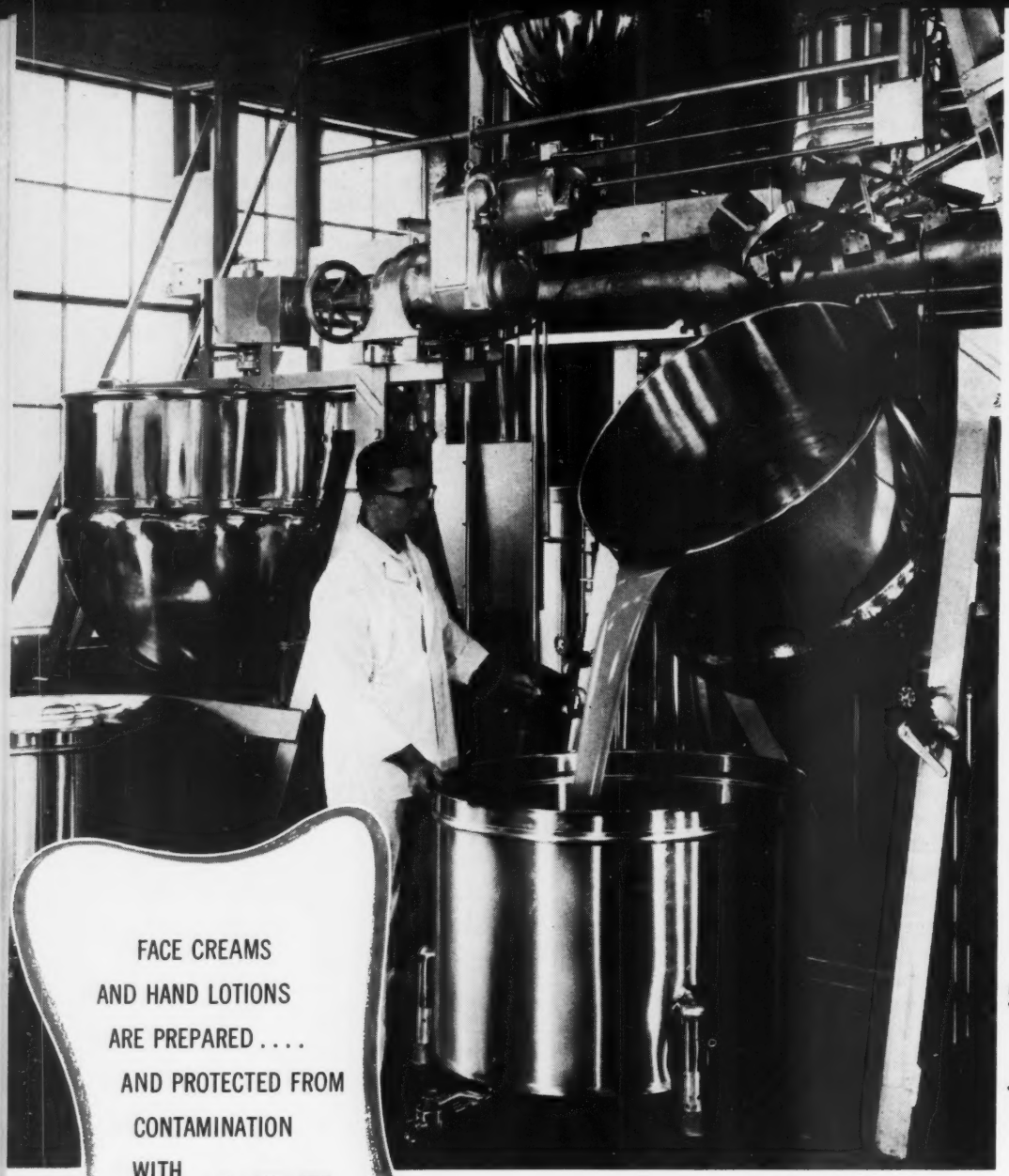


streamlined cabinet base. The working parts have the same accomplishment but the physiognomy has been beautified.

The machine is available in the No. 1 size, which has a delivery of ½ oz. to 16 oz. per stroke; or the No. 2 size, having a stroke output of 2 oz. to 32 oz. If both sizes are required, only an additional piston, cylinder and adapter are necessary.

With the exception of gaskets and seals all parts contacting the product are fabricated of stainless steel and Teflon. The Mono-Piston has a stout transmission, a motor of more than ample size, and a variable speed drive with convenient handwheel control. The Teflon piston operates with a clearance between it and the stainless steel wall, the compression being maintained by an "0" ring. The piston is carried in true relation to the cylinder walls to minimize wear. Moreover, the piston has an extended body so that there is a long bearing surface.

The sanitary construction makes it distinctly desirable for the food, paint, pharmaceutical, cosmetic and chemical industries. The equipment is easily and



FACE CREAMS
AND HAND LOTIONS
ARE PREPARED....
AND PROTECTED FROM
CONTAMINATION
WITH

LEE STAINLESS STEEL KETTLES

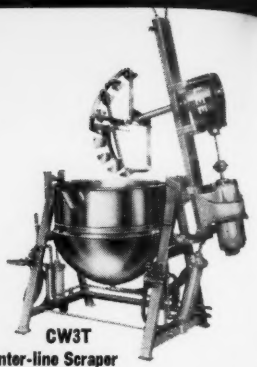
Courtesy of Charles of the Ritz

Assuring high quality control in the production of delicate creams and lotions, these Lee steam-jacketed stainless steel kettles are corrosion-resistant and easy to clean and keep clean.

Complete product mixing is obtained through the use of Lee double-motion center line scraper agitators, whose large stainless steel scraper blades continually move the contents from the heated walls toward the center, keeping an even temperature throughout.

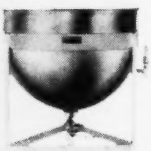
Lee hydraulic operated cylinders—using your present water lines—give perfect control and safety not only in tilting the kettles for pouring and cleaning, but also in raising and lowering the tilting agitators.

Descriptive bulletins for all of our specially-designed processing equipment available on request.

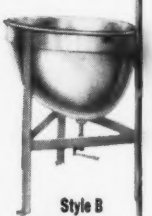


CW3T
Center-line Scraper Agitator Kettle
80 to 300 gal.

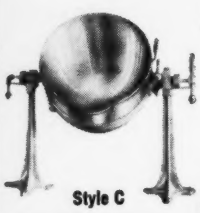
Quick Cooling Pan
50 to 200 gal.



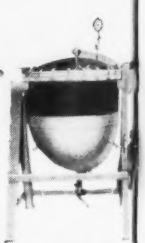
Style A
Two-thirds Jacketed
5 to 500 gal.



Style B
Full Jacketed
10 to 300 gal.



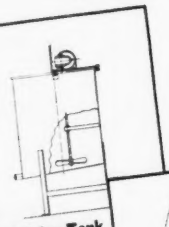
Style C
Two-thirds Jacketed
5 to 100 gal.



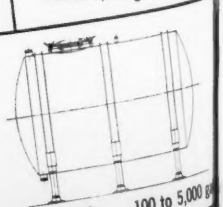
Pressure Kettle
Two-thirds Jacketed
40 to 200 gal.

Style CW
Two-thirds Jacketed
80 to 300 gal.

Pulp Tank
500 to 2,000 gal.



Mixing Tank
25 to
500 gal.



Storage Tank — 100 to 5,000 g

Technical bulletins fully describing these processing units gladly sent on request.

LEE

METAL PRODUCTS CO., INC.
418 PINE STREET, PHILIPSBURG, PA.

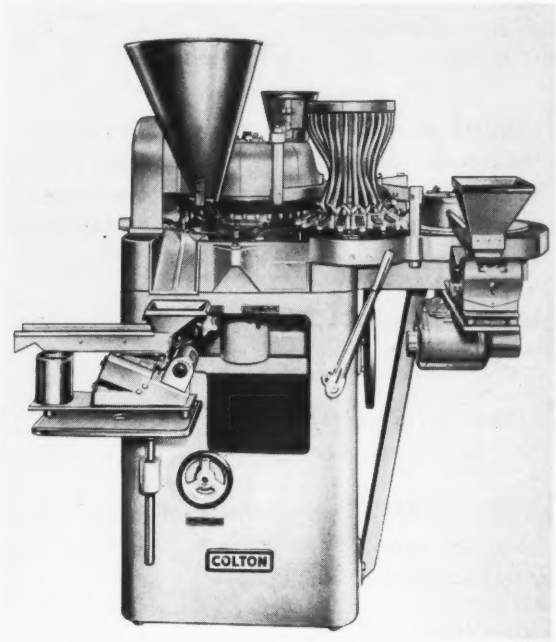
Designers and Manufacturers of Corrosion-Resistant Processing Equipment for over 25 years.

quickly dismantled, cleaned and reassembled in a matter of minutes.

New Colton Compression Coater

A radically new high-speed compression coating machine that applies uniform, dry coatings to compressed tablet cores at rates up to 900 tablets per minute has been developed by Arthur Colton Company, 3400 East Lafayette, Detroit 7. Designated as the Colton Model 232 Compression Coater, the first machine has been successfully demonstrated and will soon be in full production in the plant of a leading pharmaceutical manufacturer. A second machine will be installed at the University of Michigan School of Pharmacy where interested persons can observe its operation.

The Model 232, which occupies a 4 by 4 ft. floor space and is powdered by a 2-hp motor, will apply

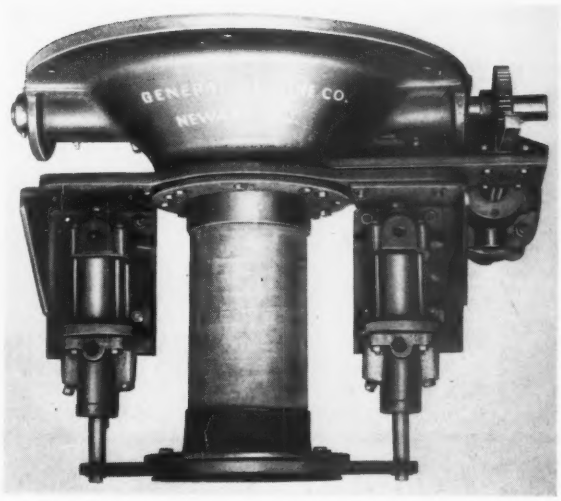


coatings of dry material to round flat-face or shallow convex-face compressed cores of either friable or hard-tablet types. The maximum diameter of the finish-coated tablets handled by the standard machine is 5/8-inch. Total standard depth of fill is ½-inch and maximum compression force is 5,000-lb.

Retractable Sleeve for "Dust-Proof" Loading

The GEMCO Retractable Sleeve for loading and unloading blenders, produced by the General Machine Company of N. J., 55 Evergreen Place, Newark, is claimed to completely solve the problem of charging and discharging dry powder materials without dusting or spilling.

A precision-built rubber and metal sleeve attached to the blender can be expanded from 2" to 4" or more

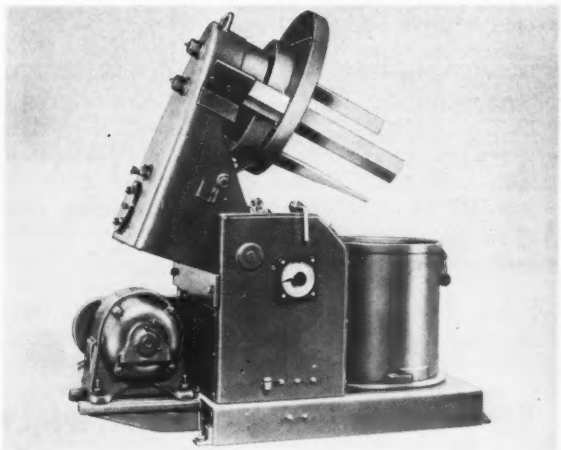


to give positive control of the flow of dry powders between the blender and any container without the wasteful or hazardous leakage of materials. When combined with the GEMCO Dust-Tite Valve, engineers agree that the operation is "dust-proof."

Eight-Gallon Double Paddle Mixer

A smaller size double paddle mixer suitable for small batch work in mixing paints, chemicals, inks, etc., has just been introduced by The Cincinnati Hildebrand Company, 3410 Beekman St., Cincinnati 23, Ohio. The unit has almost all features found in the company's larger mixers.

It is emphasized by company engineers that there has been no sacrifice of ruggedness along with the reduction in size of this new eight gallon capacity model. It is very heavily built, with the strength necessary to withstand strains imposed by heavy mixes. A 2 H. P. motor powers blades and can table in a close-coupled drive arrangement. A hand tilting device to lift the paddles is balanced and pivoted for raising and lowering ease. The illustration shows the head in the raised position permitting ready filling and quick replacement of the cans.



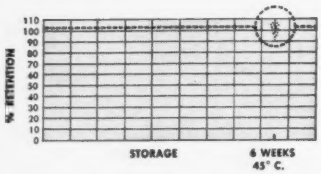
Why you should use

'ROCHE' { RIBOFLAVIN (vitamin B_2) / RIBOFLAVIN-5'-PHOSPHATE SODIUM

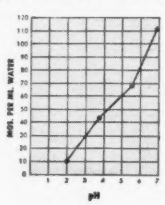
With the varied requirements for vitamin products in mind, Roche has developed three types of riboflavin to meet your formulating needs. As with all Roche vitamins, there are good reasons why you should specify riboflavin '*Roche*'. These again prove the wisdom of our statement: "It pays to stay with the leader."

A. THREE TYPES. Roche makes three types of riboflavin, each of which has special advantages for pharmaceutical manufacturers.

- **RIBOFLAVIN 'ROCHE'—REGULAR.** Especially useful for powdered dietary supplements, pharmaceutical tablets, soft gelatin capsules and dry enrichment premixes.
- **RIBOFLAVIN 'ROCHE'—SOLUTIONS TYPE.** For use in parenteral solutions which approach or slightly exceed the maximum solubility of B_2. Less likely to crystallize out.
- **RIBOFLAVIN-5'-PHOSPHATE SODIUM 'ROCHE'.** An original Roche development. Preferred for all solutions because it is rapidly and highly soluble. Better taste . . . no bitter after taste. Eliminates need for solubilizers. Specially valuable for highly concentrated oral and parenteral multivitamin solutions (with or without ascorbic acid), elixirs, syrups, water dispersible multivitamin formulations in capsules, tablets, lozenges. Theoretical B_2 content: 73%. Roche product: 70-73%.



STABILITY in B-complex parenteral solutions with or without vitamin C.



SOLUBILITY in water at different pH levels; room temperature.

B. QUALITY. All riboflavin 'Roche' (Regular and Solutions Type) meets U.S.P. requirements. Riboflavin-5'-Phosphate Sodium 'Roche', for which no U.S.P. standards exist, meets the exacting production controls established by Roche for all of its vitamins. Roche uses its own synthesis in the manufacture of riboflavin.

C. UNIFORMITY IN COLOR. Uniform color of each type is maintained in Roche manufacturing.

D. STEADY SUPPLY. Roche makes vitamins, including riboflavin, by the tons. You are sure of steady supplies.

E. QUICK DELIVERY. Every order receives prompt, careful service from convenient points. Transportation at lowest rate allowed and prepaid to destination. Special routings at cost.

F. PACKAGING. Packed in polyethylene bags in ½ and 1 kilo tamperpruf metal containers and in fibre drums up to 20 kilos. Small quantities in amber s.c. glass bottles.

G. LEADERSHIP. Because of its position as a world-leader in research and production of vitamins you can rely on Roche.

H. NEED SAMPLES? Ask your Roche salesman or write the Vitamin Division for samples and technical literature.

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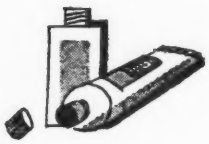
Pacific Coast distributor: **L. H. BUTCHER COMPANY, San Francisco • Los Angeles • Seattle • Portland • Salt Lake City**

In Canada: **Hoffmann-La Roche Ltd., 286 St. Paul Street, West; Montreal, Quebec**



Advancing Therapy

Virus Killers

Experiments by G. E. Underwood and S. D. Weed (*Proc. Soc. Exptl. Biol. Med.* 93:421, 1956) indicate that glyoxal and Kethoxal (β - ethoxy - ϕ - ketobutyraldehyde) may have value as virucidal agents. Both chemicals were more potent in destroying the infectivity of influenza A, Newcastle disease and mouse hepatitis viruses than was an equimolar amount of β-propiolactone (BPL). Glyoxal appeared to be less lytic than BPL or Kethoxal and none of these chemicals caused significant changes in human plasma proteins at concentrations which were effective in sterilizing artificially-infected blood. These results suggest that glyoxal and Kethoxal hold some promise as blood-sterilizing agents. Since thorough studies have not been made on the toxicity of glyoxal for mammalian hosts, further work is required before it can be applied to the large scale sterilization of blood and plasma. The marked superiority of glyoxal over formaldehyde as a virus inactivating agent suggests also the possible application of glyoxal in the preparation of "killed" vaccines or as a general viral disinfectant.

Hydrocortisone and Cortisone

Merck & Co., Inc. has published a 186 page book on hydrocortisone and cortisone which has been modestly called a service bulletin. The first part on chemical, analytical and pharmaceutical information includes sections on isolation and synthesis, chemical and physical properties, product forms, assay methods and pharmaceutical applications. This part covers 22 pages, with 46 references.

The second part, physiologic, pharmacologic and clinical information is subdivided into physiology and pharmacology and clinical applications. This part covers 41 pages and 250 references. The annotated bibliography covers the clinical uses of hydrocortisone and cortisone in 208 references covering 105 pages. An index of subjects covering the annotated bibliography and an index of authors tops off this very fine book.

Sodium Dioctylsulfosuccinate Laxative

Two controlled experiments are described by J. Rendle-Short (*Lancet.* Dec. 8, 1956, p. 1189). These were designed to assess the efficacy of dioctyl sodium sulfosuccinate.

In the first experiment children with fecal impaction selected by random sampling were given either dioctyl sodium sulfosuccinate by mouth and enemata, or a standard mixture of purgatives by mouth and plain water enemata. The results in the two groups were almost identical, the only complete failure being in a child given dioctyl sodium sulfosuccinate.

In the second experiment children were given either dioctyl sodium sulfosuccinate or syrup of figs as a simple aperient before intravenous pyelography. The efficacy of the drugs was assessed by examining the control films taken before an intravenous pyelogram. In the dosage in which it was administered dioctyl sodium sulfosuccinate had no value as an aperient.

Hydrocortisone—Selenium Sulfide Ointment

A. L. Welsh and M. Ede (*A.M.A. Arch. Dermatol.* 75:130, 1957) concluded that the ointment containing 0.5 per cent selenium sulfide and 0.5 per cent hydrocortisone is the agent of choice in the treatment of patients who have acute or extensive eruptions of seborrheic dermatitis; in patients who have seborrheic dermatitis complicating atopic dermatitis, chronic infectious eczematoid dermatitis or extensive contact dermatitis, and in patients who have seborrheic dermatitis complicated by chemical irritation from treatment or other contact agents. In patients comprising the above groups, this combined ointment is more effective and better tolerated than are other formulations containing selenium sulfide alone or any other available antiseborrheic agents.

Phenaglycodol

Among a series of diols studied by Gibson, Mills and Swanson, phenaglycodol (2 - p - chlorophenyl - 3 - methyl - 2,3-butanediol, "Ultran"—Lilly) was outstanding because of the relatively long duration of its anticonvulsant action. While the compound was being tested for antiepileptic activity, the ward attendants reported that the children had become much easier to handle. Further clinical investigation has confirmed the impression that phenaglycodol can be classified as a tranquilizing agent of the muscle relaxant group.

Animal experiments by I. H. Slater, G. T. Jones and W. K. Young (*Proc. Soc. Expll. Bio. Med.* 93:528, 1956) confirm that phenaglycodol is a sedative that differs materially from the barbiturates in its mode of action; it has properties in common with the interneuronal blocking agents such as mephenesin, at least at the level of the spinal chord.

Tagged TB Drugs

PAS (para-amino-salicylic acid) and isoniazid, were labeled with radioactive carbon 14 and traced throughout the bodies of infected animals to determine which one did the best job of destroying TB germs.

Isoniazid, generally considered to be the best anti-TB drug now in use, was found to be retained in tubercular lesions while the other drug, PAS, penetrated the lesions but left them just as quickly.

Infected tissues such as spleen and lung seemed to store up the available isoniazid. The more infected the tissue, the greater was this storing up. The distribution of the PAS drug, on the other hand, was not affected.

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Cleanliness That Clings

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Cleanliness that clings—the continuous hour-after-hour degerming action of G-11—is the secret of success behind many leading soaps, creams, lotions and other beauty products.

G-11 provides protection against bacteria *between washings.* It leaves a microscopic anti-bacterial deposit that does not rinse off but stays on to stop the growth of trouble-making germs deep in the skin. It is easy to incorporate into your formula.

For users of your products, G-11 means fresher, cleaner skin, better protection against skin blemishes, and effective deodorizing action. May we tell you more about the sales- and profit-making benefits of G-11?

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Drs. Alfred Heller, Dieter Koch-Weser and Lloyd J. Roth, University of Chicago, and Dr. Robert H. Ebert, now at Western Reserve University, Cleveland, Ohio, reported on the research in the *American Review of Tuberculosis and Pulmonary Diseases* (Jan.).

New TB Drugs

Ethyl mercaptan exerts a profound effect on the tuberculous process in mice, according to G. E. Davies et al. (*Brit. J. Pharmacol. and Chemother.* 11: 351, 1956). Any compound which can be expected to produce ethyl mercaptan either before or after absorption shows antituberculous activity, and this activity is specific for the ethyl radical, even closely related thiols being completely inactive. The activity of the ethyl mercaptan derivatives varies considerably, no doubt owing to variations in absorption and degradation, but the most attractive and consistently active group of derivatives consists of the ethyl thiol-esters.

Nitrofuran Compounds

Eight nitrofuran compounds have suppressive effects on *T. cruzi* infection in mice according to A. Packchanian (*Antibiotics and Chemother.* 7:13, 1957).

Of these eight compounds, four, in adequate therapeutic dosage, rapidly changed the course of *T. cruzi* infection in mice from an acute fatal to a chronic and latent form. None of the animals that survived more than two months as the result of therapy were absolutely free of *T. cruzi*.

Those nitrofuran compounds that were effective intraperitoneally against acute *T. cruzi* infection in mice produced essentially the same therapeutic results when administered orally.

Nitrofurazone (NF-7), which produced only suppressive effects on *T. cruzi* infection in mice, was found to have curative effects against *Trypanosoma gambiense* or *Trypanosoma rhodesiense* infections in mice.

It appears from the present study that one cannot assume, because a compound proves ineffective on *T. cruzi* in vitro, it is also ineffective in vivo and vice versa.

Since four nitrofuran compounds were shown to have definite suppressive effects on acute *T. cruzi* infection in experimental animals, it is suggested that these compounds may be used orally, particularly nitrofurazone, either alone or in combination with other trypanocides, as a suppressive measure against acute cases of Chagas' disease in man.

Inasmuch as all compounds tested by various investigators against *T. cruzi* infection in man and animals to date have failed to cure the disease, a new drug that will produce an absolute cure remains to be discovered.

Antifungal Parabens

M. Huppert (*Antibiotics and Chemother.* 7:29, 1957) investigated the antifungal activity of a homologous series of normal alkyl esters of p-hydroxybenzoic acid through the ester with palmityl alcohol. Maximum antifungal activity occurs with the hexyl and heptyl esters, except when a particular fungus is so sensitive as to be inhibited even by the very low concentrations obtained with the highly insoluble higher esters. The parabens with the greatest antifungal activity are considerably more effective than caprylic acid, sorbic acid or tetramethylthiuram disulfide, particularly at neutral and alkaline pH values. The hexyl and heptyl esters inhibit representative strains of most of the fungi known to cause disease in humans and in vivo testing of these esters is suggested.

Comment: It is possible that the activity of these compounds may be greatly enhanced if they are physically solubilized as with various surface active compounds, as well as special solvents. An ointment for topical application, with a balance of solvents and surfactants to improve solubility might prove effective and useful. More speculative is the possibility of solubilizing the long chain ester by adding a solubilizing group, possibly polyoxyethylene, to the phenolic group in the molecule. These suggestions, both physical and chemical solubilization, would certainly require testing to verify either the same or improved activity. Incidently, with evidence of complex formation between parabens and polyoxyethylene compounds, with inactivation of the paraben, solvents and added groups must be seected carefully to avoid inactivation.

Ion Exchange Resin for Uremia

An effort was made by R. J. Gailitsi and G. H. R. Lambers (*Ill. Med. J.* 110: 214, 1956) to improve the management of uremia associated with hyperpotassemia by combined dietary management and the use of potassium exchange resin, because the use of intestinal perfusion, peritoneal irrigation, or the artificial kidney is not always feasible. The histories of four patients are presented who were treated by Borst's diet and potassium exchange sodium carboxylic resin with striking decreases in potassium levels and improvement of their clinical condition.

The Borst diet provided a high-caloric, low-electrolyte means of alimentation, which most patients found palatable. The exchange resin used was a new sodium carboxylic resin charged with the sodium ion, in contrast to the ammonium-charged ammonium car-box ylic resin described by others. It has several advantages over other exchange resins: 1. The sodium ion is more innocuous than the ammonium ion in uremic patients, since ammonia is converted to urea in the liver and the addition of more ammonium ion in the resin would tend to elevate an already high blood urea level. 2. The sodium ion in the resin is poorly absorbed from the gastrointestinal tract, and the only sodium absorbed is most likely that which is exchanged for the potassium ion. This slight increase of sodium ion concentration is negligible as far as altering the over-all sodium level in the extracellular spaces is concerned. 3. The ammonium ion, which usually is in high concentration in uremic patients, can combine with the sodium carboxylic resin and be excreted by the gastrointestinal tract, thus reducing the level of ammonium-containing compounds in the body. This mode of therapy can be utilized by any physician who has access to a reliable clinical laboratory where accurate electrolyte studies can be obtained. The electrolyte status should be followed closely and the resin be discontinued as soon as the potassium level reaches 4 mEq. per liter, or a serious hypopotassemia may result.

Moderil (Pfizer) consists of rescinnamine, a Rauwolfia alkaloid with ataractic and hypotensive action. It is available in bottles of 100 and 500 scored 0.25 mg. tablets and bottles of 100 scored 0.5 mg. tablets.

Cantil (Lakeside) is a specific colon anticholinergic, the active ingredient being N-metyl-3-piperidyl-diphenylglycolate methobromide. It is available as 25 mg. scored tablets in bottles of 100 and in combinations containing phenobarbital—bottles of 100 tablets containing 25 mg. of Cantil and 16 mg. of phenobarbital.

Biopar Forte (Armour Laboratories) is available in bottles of 30 tablets. Each tablet contains vitamin B_{12} activity equivalent to 25 mcg. and ½ U.S.P. unit intrinsic factor concentrate.

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Compounder's Corner

Dandruff Preparations

Preparations for the treatment of dandruff, now being marketed by a number of companies with primary interest in cosmetics, include the sulfur shampoos Enden of Helene Curtis and Thylox of Shulton as well as the after-shampoo treatments Sebb of Max Factor and Theradan of Bristol-Myers. According to a survey in "Chemical Week" for December 22, 1956, Shulton and Curtis have incorporated precipitated sulfur along with a bacteriostat or fungicide in a soapless shampoo base, while Sebb and Theradan are not shampoos. Sebb is based upon the R. T. Vanderbilt Vancide 89, while Theradan contains a quaternary ammonium salt of a polythionate along with tetradecylamine, N-lauryl sarcosine and a grooming agent.

Selsun, a shampoo preparation marketed on prescription only by Abbott Laboratories and based upon selenium sulfide, has had extensive clinical testing for dandruff and has gained the confidence of many physicians. Recent applications in various dermatological situations have also been promising. Toxicity of the selenium sulfide limits the preparation to ethical distribution. The effectiveness of this preparation reduces the validity of the argument that shampoo preparations do not permit long enough contact with the scalp to assure effective action. Thylox is said to contain a special form of precipitated sulfur that penetrates the epidermis and is substantive to the skin, so that its action is prolonged. The components in Theradan, positively charged, would tend to be substantive and not readily washed out of the hair. Sebizon lotion, a vanishing cream-type lotion contains 10 per cent of sodium sulfacetamide, and is being promoted ethically by Schering.

Some of these preparations have been mentioned previously in this magazine. See *D.C.I.* 77:44, 1955; 77:397, 1955; 77:109, 1955.

Organo Functional Silanes

The Silicones Division of Union Carbide and Carbon Corporation has issued a booklet describing unique silicon intermediates that lend themselves to the straightforward synthesis of an extensive series of organic chemical compounds containing silicone. The compounds X-1901 and X-1902 are primary amines, the compounds X-1911 and X-1912 are carbethoxy derivatives.

The amines will form inorganic and organic acid salts, amides, azomethines, substituted amines and quaternary salts, ureas, dithiocarbamates, triazines, sulofnamides, pyrroles, etc. The carbethoxy compounds can react with water, alcohols, amines to form polymerized as well as monomeric products.

New compounds containing silicon may well reveal unique properties of outstanding value in both pharmaceutical and cosmetic applications.

Enteric Coatings

Experimental enteric coatings were applied to conventional, convex-shaped tablets composed of acetophenetidin and amaranth incorporated as a color indicator by W. J. Sheffield and H. O. Thompson (*Drug Standards* 24:211, 1956). An *in vitro* method to determine the disintegration rate of enteric coatings, based on the official method of determining the disintegration rate of uncoated tablets, was devised. All in vitro tests were carried out in acid pepsin solution, *p*H 1.5; alkaline pancreatin solution, *p*H 8; and acid pancreatin solution, *p*H 6. Attempts to meet satisfactory disintegration standards by incorporating each of several commercially prepared synthetic resins in enteric formulations were successful in the acid pepsin and alkaline pancreatin solutions, but were unsuccessful in the acid pancreatin solution. An enteric coating, composed of stearic acid, mutton tallow, shellac, sodium taurocholate, and ox bile extract, was formulated. This coating gave very satisfactory disintegration results when applied to small batches of tablets using an equal weight mixture of magnesium stearate and talc as a dusting powder. Comparable disintegration results were not achieved entirely when the coating was applied to pilot size batches of tablets. This inconsistency appeared to be a matter of developing a coating technique peculiar to large batches of tablets. The enteric action of the coating was not changed significantly after a storage period of nine months or after sugar coatings were applied.

Synthrapol PWS

Synthrapol PWS, a non-ionic surface, active agent, is announced by Arnold-Hoffman & Company, Inc., as culminating three years' research in the field of ethylene oxide condensates.

On the basis of redeposition and soil removal tests, Synthrapol PWS is shown to possess excellent detergent properties on cotton, even in extremely low concentrations. Similarly, low concentrations produce extremely effective results as a woolen piece goods detergent and as a scouring agent for raw wool. Aside from this agent's normally high detergency in low concentrations, it is reported that detergent properties can be increased considerably by the addition of any one of a number of builders.

Synthrapol PWS is described in Alco's Technical Bulletin No. 132 as showing good compatibility with other agents. Being chemically inert, it possesses much greater stability under a variety of conditions than do the anionic surface-active group. It is fully effective in hard water and will not form precipitates with calcium and magnesium salts.

Hair Grooming Patents

Two U. S. Patents, Nos. 2,771,394 and 2,771,395, have been issued to R. J. Mehaffey of the Colgate-Palmolive Company for hair-grooming preparations. A typical formula given in the first patent is

Butoxypolyoxypropylene glycol	20.0
Propylene glycol monolaurate	1.10
Monopolyoxyethylene glycol 400 coconut fatty acid ester	2.00
50 per cent solution cetyl dimethyl benzyl ammonium chloride	1.00
Tincture of capsicum	0.50
Menthol	0.50
SDA 40	51.25
Perfume	0.40
Water	23.25
Color	qs

In the second patent, the formula given includes the use of sodium carboxymethyl cellulose:

25 per cent sodium carboxymethylcellulose solution	47.850
SDA 40	39.70
Monopolyoxyethylene glycol 600 coconut fatty acid ester	10.0
Propylene glycol monolaurate	2.00
Tincture of capsicum	0.050
Cetyl dimethylethyl ammonium bromide	0.10
Perfume oil	0.30

Sulfadiazine Sodium Solutions

Various solutions of sulfadiazine sodium were formulated by F. S. Hom and J. Autian, containing water or a mixture of water and polyethylene glycols as solvents. The paper was presented before the Pharmacy Section of the AAAS on December 26, 1956. Sodium sulfite, sodium formaldehyde sulfoxylate and sodium thiosulfate were incorporated into a number of the formulas as antiixodants. The solutions were placed in ampuls and sealed in either the presence of air or in a nitrogen atmosphere. The results of the experiments indicated that oxygen was the chief factor for the deterioration of sulfadiazine sodium injection. The catalytic effect of light also was shown dramatically. Stable injections were prepared by the use of an antioxidant (sodium sulfite or sodium formaldehyde sulfoxylate), polyethylene glycols and by maintaining a nitrogen atmosphere in the ampuls.

Tar Extract—Hydrocortisone Ointment

A study was undertaken by J. Bleiberg (*J. Med. Soc. N. J.* 53:371, 1956) to evaluate the effectiveness of a combination consisting of five per cent coal tar extract and 0.5 per cent hydrocortisone free alcohol in a vanishing cream base.

The cream was supplied in one-half ounce tubes, and the patients were instructed to apply it twice daily. The cream was given only to patients suffering from subacute and chronic dermatoses.

By comparison with previous experience, the combination of tar and hydrocortisone proved more effective than either medication alone, and was more effective than preparations containing more than twice the concentration of hydrocortisone alone.

In pruritic dermatoses and dermatitis venenata (chemical, oak or ivy), relief from itching was gratifyingly prompt and the inflammatory reaction was more quickly controlled. The response in anogenital pruritus was particularly remarkable. Patients refractory to all previous medication cleared completely after a few weeks of therapy.

Recurrent dermatoses, such as atopic dermatitis, neurodermatitis, anogenital pruritus and hand eczemas that had been treated on one or more occasions previously with other agents, responded more quickly and often cleared completely on the combined therapy.

In the entire series there was no exacerbation, nor was there any evidence of irritation or sensitivity, even when the cream was used in intertriginous areas.

French Lipsticks

Regarding the coloring agents used, the eosines and erythrosines (or, Bengal roses) are still preferred; these are pure, acid dyestuffs.

The dyes have to be combined with solvents which will bring out their brilliance and insure good keeping qualities.

A solvent no longer used because of its odor and taste is furfuryl hydracrylic alcohol. A better product derived from polyethylene glycol is an odorless liquid, rather pleasant in taste and absolutely harmless with outstanding power of solubilizing phthalein dyes.

A carefully selected combination of modern dyes and solvents should be complemented by an addition of suitable pigments. The pigments must be pure with no fillers added, and sufficiently powerful for use in small quantities, so they will not paste up the lipstick base and affect its luster and spreading. The pigment should be finely powdered and as close as possible to the colloidal state; no abrasive component whatsoever must be present.

The lipstick bases preferred consist of a mixture of vegetable and animal fats. Hydrogenated oils are suitable as a base, with completely deodorized lanolin of high purity and pale color added. Combinations of animal fats and vegetable oils are favored by the leading houses because they have been found to produce a high gloss in the molded stick. Modern base components are cetyl esters of ricinoleic acid, and the new hydrosqualenes derived from shark liver.

A permanent high gloss results from the addition of specific resins: these are made by interrupting the polymerization of polyvinyl resins at a predetermined stage, and compounding the product thus recovered with natural resins.

The melting point of the lipstick is adjusted, as usual, by an addition of carnauba wax. A specific fraction of this wax is eminently suitable in this instance, namely, one which has been completely purified of detrimental coloring matter. It is a ceroid with a high melting point that will exert its action even in slight additions without imparing the brilliant appearance of the product.

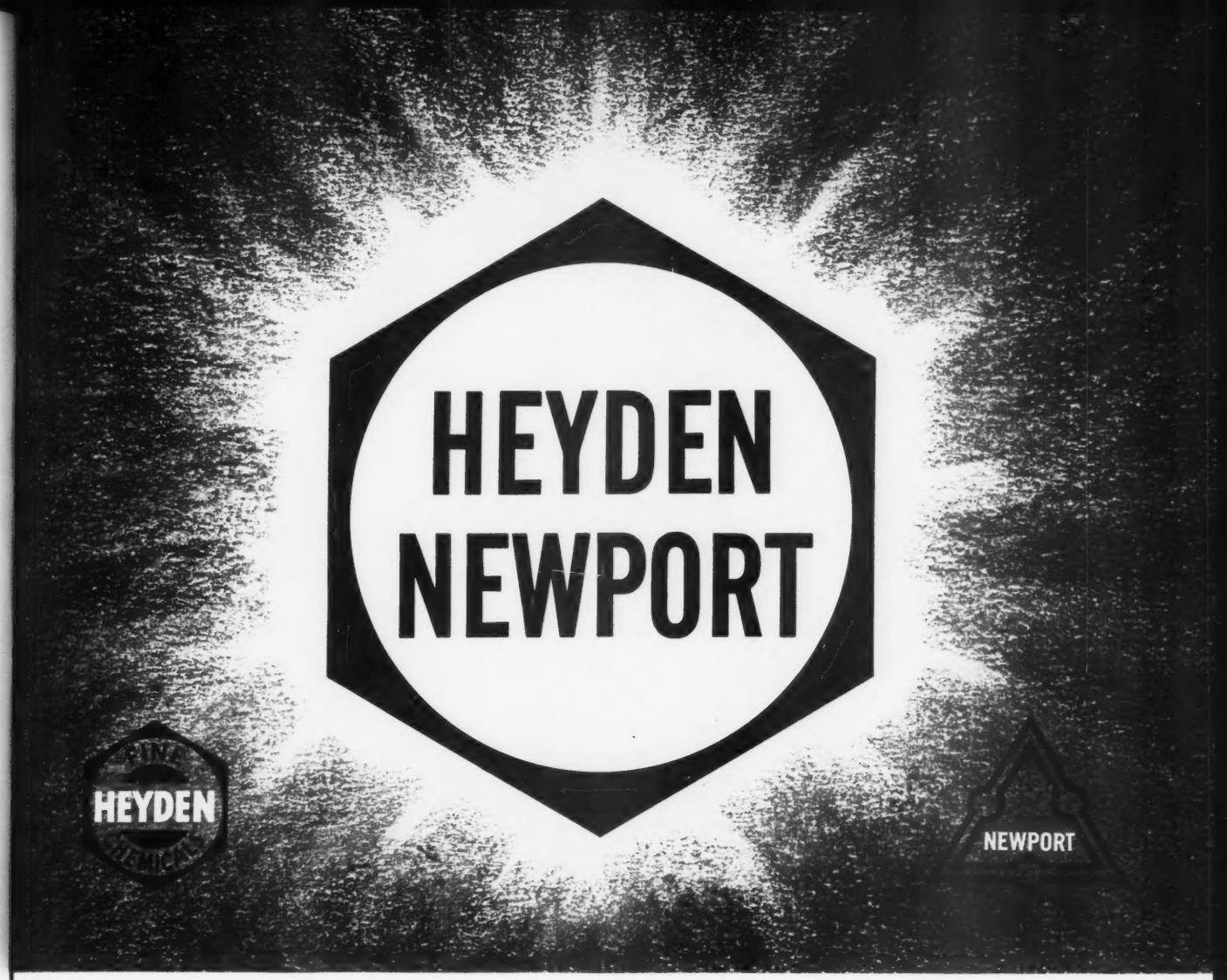
For the best results it is advisable to melt all the fatty substances gradually and systematically, starting with the highest-melting material and adding the others in the sequence of their melting points, with the lowest-melting fat last.

It is of importance for the coloring power of lipstick that all its coloring agents be mixed thoroughly with the solvent, before proceeding further.

The colored solution of dyes, with pigments added, is finally blended with the melted waxes and fats. Upon cooling, the entire material is finely crushed and perfumed.

The moulds are of stainless steel. The individual grooves are polished to a high gloss which is reproduced in the lipstick as such. It is of importance to have the molded, glossy-red lipstick conditioned, and placed in its container, without any formation of fingerprints on it. To this end, molding machinery has been developed which permits direct insertion of the stick into the cap provided in the container.—E. Bourdet, *P.E.O.R.* 48:36, 1957.

Achromycin V (Lederle) capsules contain 250 mg. of tetracycline hydrochloride and 380 mg. sodium metaphosphate and are packaged in bottles of 16 and 100. The metaphosphate is said to combine with certain ions that inhibit absorption of the tetracycline so that significantly higher blood levels of antibiotic are produced.



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Trade Literature

"Freon" Propellents

"Kenetic" Chemicals Division, E. I. du Pont de Nemours & Company, Wilmington 98, Delaware, has issued "Kenetic" Technical Memorandum No. 21, entitled Aerosol Emulsions with "Freon" Propellents. The data given describe water-base systems for aerosols which enable a manufacturer to obtain as wide a variety of sprays as are possible with solvent base systems. The facts presented should inspire ideas for new aerosol products.

Rheumatism

Schering Corporation, Bloomfield, N. J., has issued a booklet entitled Rheumatism and illustrating the anatomy of nonspecific rheumatic disorders. The booklet has been distributed to the medical profession, and is described as a visual guide to anatomy, for patients. It is a beautiful piece of work.

Solvay Booklet

Solvay Process Division, Allied Chemical & Dye Corporation, 61 Broadway, New York 6, has issued a comprehensive booklet of 56 pages giving informative data on the uses, markets, physical and chemical properties, packaging and handling and storage of all Solvay products. Also included is a listing which groups the products by consuming industries or manufacturing processes.

Corn Syrups and Sugars

Corn Syrups and Sugars, a 48-page booklet, is available from Corn Industries Research Foundation, 3 East 45 Street, New York 17. Grouping the products into four major classifications —corn syrups, corn syrup solids, crude corn sugar and dextrose (refined corn sugar)—the booklet covers manufacturing processes, physical, chemical and other properties, recommended handling equipment and procedures. Analytical methods are also outlined.

Lecithin

Spencer Kellog and Sons, Buffalo 5, N. Y. has published a bulletin on lecithin and its applications which includes complete specifications of the several grades of Kelecin, which is the trade name the company has given to its recently developed line of these chemicals.

Drugs in Psychiatric Therapy

Sodium Succinate as an Adjunct in Psychiatric Therapy, a 12-page pamphlet, has been issued by The New York Quinine & Chemical Works, 50 Church Street, New York 8, as the latest in the series of N. Y. Cues. The pamphlet describes clinical studies in which sodium succinate has been used alone and in combination with other drugs, notably barbiturates and reserpine. Combined with barbiturates, it has been valuable in treating refractory schizophrenic patients. A beneficial effect has also been found from sodium succinate in cases of depression resulting from long-term reserpine administration.

Methylene Chloride

Methylene Chloride — The Better Multipurpose Solvent is the title of a new 24-page booklet outlining the wide range of uses for this basic chemical, available from The Dow Chemical Company, Midland, Michigan. The three-color booklet gives complete technical data, and shows the advantages of the chemical as an aerosol pressure depressant, as well as for other uses.

Tertiary-alkyl Amines

Rohm & Haas Company, Washington Square, Philadelphia 5, has published a new 36-page booklet describing four tertiary - alkyl primary amines now available. The booklet gives physical and chemical properties, suggested applications, and chemical reactions for *l* - butylamine, *l* - octylamine, Primene 81-R, and Primene JM-T.

Nysco Catalog

Nysco Laboratories, 34-24 Vernon Boulevard, Long Island City 6, N. Y., has issued its new catalog of bulk pharmaceutical and drug products. Prices for tablets are quoted for bulk containers of 50,000, with slightly higher prices for lots of 25,000 and 10,000. Bottling charges are also quoted.

Lists 4,000 Chemicals

Matheson, Coleman and Bell, 2909 Highland, Norwood, Ohio, has issued its 1957 catalog which lists over 4,000 chemicals manufactured and distributed by the firm, including fine organics, inorganic reagents, indicators and certified biological stains.

Pharmaceutical Flavor Guide

Fritzsche Brothers, 76 Ninth Avenue, New York 11, has published a 52-page Pharmaceutical Flavor Guide, giving comprehensive, easy-to-use information for manufacturers of ethical and proprietary medicines. The booklet covers approximately 40 pharmaceutical groupings, and accompanying each are selected flavoring recommendations, all of which have been fully tested and proven adaptable to the type of medicinal product indicated.

Stokes Microvac Pumps

The recently increased performance ratings of Stokes rotary mechanical vacuum pumps, as well as a wealth of other information helpful to engineers confronted with vacuum processing problems, are contained in a new, completely revised edition of the 28-page catalog on Stokes Microvac Pumps for High Vavuum just issued by F. J. Stokes Corporation, 5500 Tabor Road, Philadelphia 20.

SAMA Tentative Standard

The SAMA Tentative Standard, RC-3-12-1955, "Accuracy and Sensitivity Terminology as Applied to Industrial Instruments," is available from Hampton M. Auld, executive secretary, Recorder-Controller Section, Scientific Apparatus Makers Association, 522 Fifth Avenue, New York 36. These standards remain tentative for a period of two years before becoming SAMA industry standards. These standards are adopted in the public interest and are designed to eliminate misunderstandings between the manufacturer and the purchaser and assist the purchaser in selecting and obtaining without delay the proper product for his particular need.

Electron Microscopes

A new 12-page brochure titled Norelco Electron Microscopes, giving complete data on the construction and operation of such instruments, is available from the Instruments Division, North American Philips Company, 750 South Fulton Avenue, Mount Vernon, N. Y. In color, the booklet covers the electron optical system, pumping unit, electronics, high voltage, column, gun, magnetic beam alignment, condenser and aperture, beam wobbler, objective lens and astigmator. It also discusses wide field scanner, diffraction lens, intermediate lens, projector lens, and other things.

Skin Research

Dermal-Epidermal Junction

The presence or absence of a basement membrane at the epidermal-dermal junction has been, and probably will remain, problematical. That a periodic-acid-Schiff (PAS)-positive zone occurs at the epidermal-dermal junction is undoubted; whether this actually is a basement membrane is questionable. This zone, or membrane, definitely has some characteristics of a basement membrane. The purpose of this project by P. C. Ochoa, O. D. Smith and M. Swerdlow (*A.M.A. Arch. Dermatol.* 75: 70, 1957) was to study the PAS-stained membrane in a number of skin lesions and was an attempt to determine whether it was truly a basement membrane and even if not, whether its character, its presence, or absence could be of any use in diagnostic histopathology of the skin.

A PAS-positive basement membrane, the authors feel, does exist and appears to be related to the basal cells. The morphology of such a membrane has variants according to the position of the long axis of the basal cells and the position of their nucleus.

The presence or absence of a basement membrane appears to be primarily dependent upon the arrangement and integrity of the basal cells.

Hair follicles and sebaceous glands have a PAS-positive membrane similar to the basement membrane at the epidermal-dermal junction.

Sweat glands also have a PAS-positive limiting membrane which is denser and more homogeneous.

A strikingly constant feature of nevi is the presence of a PAS membrane surrounding the individual nevus cells or nests of nevus cells.

Herxheimer, in 1916, studied the problem of the epidermal basement membrane and concluded that there was present, immediately below the basal cells of the epidermis, a thin fiber 0.5μ in diameter which was morphologically distinct from the connective tissue fibers of the corium. This was interpreted by him as a basement membrane. He described fine ramifications of fibrils that at times extended from the basement membrane to intermingle with cytoplasmic processes of the basal cells.

Duhring and Klein affirmed that the boundary between the corium and epidermis was marked by a pale thin membranous structure that was conspicuous with special staining preparations and that it appeared to be a product of the deepest layer of the epidermis (i.e., the basal-cell layer).

Frieboes, in 1920, denied the presence of a basement membrane, arguing that the basement membrane is not always present as would be the case where it a true menbrane. A structure that had been misinterpreted as a basement membrane was a zone in which fibers between the epidermis and dermis crossed, as bridges; these condensed crossings, side by side, gave the false appearance of a membrane.

Szodoray, in 1931, described the junction of the epidermis and corium as consisting of three structures: "lattice fibrils" of the subepithelial layer; "flabelliform processes" derived from the lower pole of the basal cells and reaching the corium; ramified, parallel, and horizontal fine fibrils which originated from the corium and also sent processes to the basal cells. These three formed an intermingled complex of fibers connecting epidermis and corium much like "two brushes fitted together along their bristled surfaces."

Gersh and Catchpole, in 1949, studied, mainly in animals, the organization of ground substance and basement membrane with special histochemical procedures. They concluded that ground substance, whose most characteristic component is a glycoprotein, and basement membrane were very closely related in all respects, each being an optically homogeneous component of intercellular material whose physical state may vary from a fairly fluid to a gel consistency. They observed that ground substance is more concentrated and denser in the zone between the connective tissue and the epidermis.

In 1950, Odland studied the morphology of the attachment between dermis and epidermis. He observed basal cytoplasmic processes projecting into the dermal connective tissue and immediately beneath the basal surface of the epidermis, a tangled meshwork of reticular fibrils in connection with the underlying collagenous fiber bundles.

Pease, in 1951, studied the histology of the skin by electron microscopy and found it difficult to visualize the dermal-epidermal junction because of the dense accumulation of argyrophilic reticular fibers. However, in a few exceptional micrographs of particularly thin sections, a definite thin membrane at the dermal-epidermal junction was seen, though masked by the previously mentioned dense zone.

Leblond, in 1951, in an histological study of hair structure described a thin layer of distinct reticular fibers separating the basal cells of the hair follicle from the connective tissue. In areas of low biologic activity, such as the outer root sheath, the reticular fibers fuse to form a continuous basement membrane, whereas in areas of high activity, such as the Malpighian layers at the base of the hair follicle, reticular fibers are scarce or even absent.

Allen questioned the existence of epidermal basement membrane, alleging that silver stains which demonstrate a basement membrane elsewhere, demonstrated no such membrane beneath the epidermis; that in instances in which much melanin is present in a continuous rim of cells of the stratum germinativum, the band of pigment may superficially simulate a basement membrane, although its unevenness and irregularity of density are hardly suggestive of such

a membrane; that this pseudomembrane does not appear with silver stains when pigment is absent; and that in some instances even this pseudomembrane may not be detectable with the PAS stain. Leblond, according to Allen, stated that apparently in some regions and under certain conditions, the polysaccharides may be so concentrated at the epidermal-dermal junction as to resemble a basement membrane when stained with PAS.

Skin Alkaline Phosphatase

Alkaline phosphatase is an enzyme which has the capacity to liberate phosphate from a variety of phosphate-containing compounds. The nature and physiologic significance of this enzyme are outlined in a review by A. W. Kopf (*A.M.A. Arch. Dermatol.* 75:1,1957). The relative phosphatase activities of various components of the skin are as follows:

(*a*) Marked alkaline phosphatase activity: hair papillae.

(*b*) Moderate alkaline phosphatase activity: capillaries, eccrine sweat glands, external connective tissue sheath of the hair follicles.

(*c*) Mild alkaline phosphatase activity: hair bulb matrix cells, apocrine sweat glands

(*d*) Weak alkaline phosphatase activity: subcutaneous fat trabeculae (some specimens).

(*e*) No demonstrable alkaline phosphatase activity: all epidermal strata, collagen and elastica, all elements of the follicular apparatus (with the exception of those mentioned above) eccrine and apocrine ducts, sebaceous glands (with rare exceptions of weak activity in the peripheral cells), nerves, smooth muscle.

In general, alkaline phosphatase is demonstrable at sites of high metabolic activity, both in normal and diseased skin. However, the precise role that this enzyme plays in cutaneous metabolic processes remains obscure.

Keratin Precursor

When human epidermis is extracted with lithium bromide according to D. A. Roe (*J. Invest. Dermatol.* 27:319, 1956), the significant early changes consist of a disruption of intercellular bridges and tonofibrils accompanied by the appearance of an amorphous eosinophilic material in the upper Malpighian layer and between the granular and horny layers.

The disintegration of the tonofibrils and intercellular bridges can be accomplished by a variety of factors. It, therefore, appears that various physical and chemical assaults upon the protein constituent of these fibrillary structures can bring about their dissolution.

Keratins exhibit similar properties to the tonofibrils. These structures consist of extensive combinations of potentially soluble units joined by two or more chemical bonds. Because of the differences in chemical nature and environment, these bonds could be expected to show varying degrees of specificity and reaction with available bond breaking reagents. Therefore, units of different sizes can be derived from a single parent keratin by the use of different solubilizing agents.

If the tonofibrils and intercellular bridges consist of a keratin precursor, then the fibrous epidermal protein could be a keratin precursor extracted from them and solubilized by hydrogen bond cleavage.

The amorphous material has been found to be a protein which is trypsin soluble and which has an isoelectric point of approximately 4.0. This evidence suggests that it is the same substance as the fibrous epidermal protein.

The later cytolysis of the cells of the Malpighian layer by lithium bromide, may be simply interpreted that in the absence of the fibrous epidermal protein, these cells no longer maintain their structure. The theory that this protein is a keratin precursor has already been supported by physical and chemical studies.

Hydrocortisone Action

Because of the therapeutic value of hydrocortisone in a variety of inflammatory diseases of the skin when administered topically, there is considerable current interest in the mode of the local action of the hormone in the dermis.

The present study was undertaken by W. B. Atkinson, R. R. Suskind and L. Goldman (*A.M.A. Arch. Path.* 62:8, 1956) to determine the morphologic effects of this hormone when injected into normal human skin, in the hope of shedding further light on the mechanism of its physiologic and therapeutic activity.

Fourteen normal human subjects were given one or more intradermal injections of a suspension of hydrocortisone acetate or of the suspending medium alone.

The hormone preparation consisted of hydrocortisone acetate crystals, suspended in a sterile isotonic saline solution containing 1.5 per cent benzyl alcohol, 0.5 per cent sodium carboxymethylcellulose, and 0.4 per cent polyoxyethylene. The concentration of the hormone was 25 mg. per milliliter; the volume injected was either 0.1 or 0.2 ml.

Microscopic examination of biopsy specimens revealed the formation of a particulate mass of basophilic material at the site of the injection within 24 hours. The lesion appeared to be composed in part of deoxyribonucleic acid derived from the nuclear debris of disintegrating dermal connective tissue cells and infiltrating leucocytes, and in part from precipitated acid mucopolysaccharide from the dermal ground substance. Free sudanophilic lipid, derived from the breakdown of dermal cells, was also present in the lesion. The connective tissue fibers did not appear to be affected during the period of observation. Despite the extensive morphologic damage, there was but minimal inflammatory reaction by the affected tissue.

In view of the previously known anti-inflammatory action of hydrocortisone and the present observations, it was concluded that the hormone acts by a paradoxic mechanism when used intradermally as a therapeutic agent. That is, it produces local tissue damage and yet inhibits the development of an inflammatory reaction to the damage it has caused. At the same time, the hormone suppresses the inflammatory process already present as the result of the disease agent previously affecting the skin.

Lysine and Gray Hair

Lysine, long known to be necessary for proper growth in experimental rats, is also necessary to keep black rats from turning gray, Dr. F. H. Kratzer and Pran Vohra of the University of California at Davis report in *Science* (Dec. 7).

They found that when black male rats were fed a diet deficient in lysine, the animals grew a coat of hair that was much finer in texture and lighter in color than the hair of a group of rats receiving supplemental lysine.

Too little lysine also causes a loss of pigment in turkey feathers. The scientists believe the lysine plays some part in the animal's production of melanin, the dark pigment found in the skin and hair.

Butabarpal Injection (Philadelphia Ampoule Labs.) contains in each cc. 125 mg. butabarbital sodium, in 40 per cent of polyethylene glycol 400 and two per cent of benzyl alcohol along with water for injection. The preparation is available in 10 cc. multiple-dose vials.

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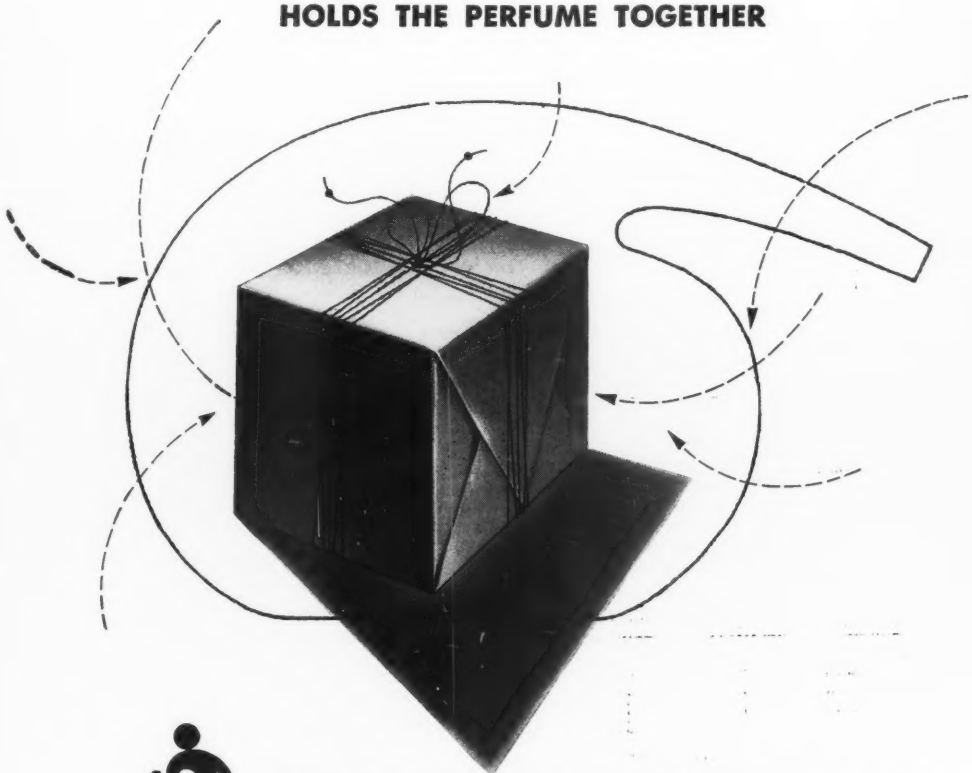

Polak's Frutal Works, Inc., Middletown, New York

*Domestic and Foreign Patents applied for.

(*Continued from page 172*)

For a product of this kind, however, the principal interest is to be sure that the compound is safe in the way in which it is to be used—a topically applied cream. The pharmacological program embraced the following tests:

1. Acute oral toxicity
2. Eye irritation and damage
3. Percutaneous toxicity
4. Skin irritation and sensitization

To determine the oral LD-50, groups of 10 or 20 albino mice were fed (by stomach tube) graded doses of the buffered aluminum chlorhydroxide-zirconium oxychloride cream formula mentioned above. The value as calculated by the method of Miller and Tainter[15] was found to be 23 gms/kg. Since this value is so high it was believed unnecessary to carry out determinations on any other species.

The amount of eye irritation and damage was determined by the method described by Draize[16]. The samples were tested undiluted in the eyes of three rabbits. One-tenth ml. of the sample was instilled into the conjunctival sac. One hour later and subsequently each day for as long as necessary, the eyes were examined for acute irritation and damage. The various types and degrees of changes observed in the cornea, iris and conjunctiva were scored by a weighted scale at each examination.

The results of these tests are given in Table I. Included, for reference, are the results obtained for a lotion based entirely on aluminum chlorhydroxide and two commercial products, one a liquid and the other a cream. The first column records the average score at maximum irritation and the time at which that maximum occurred. The second column shows the rapidity with which the eyes cleared of any signs of irritation. There is no significant difference in these samples except for the commercial cream which is considerably more irritating and, as might be expected, the irritation lasts somewhat longer.

TABLE I
EYE IRRITATION—RABBITS

	Average Score at Maximum Irritation	No. of Eyes Cleared at End of Indicated No. of Days
Aluminum Chlorhydroxide Zirconium Oxychloride Cream	14.6 (1 day)	1 in 3 days 2 in 4 days
Aluminum Chlorhydroxide Lotion	10.6 (1 hour and 1 day)	1 in 3 days 1 in 4 days 1 in 5 days
Commercial Lotion	10.6 (1 hour)	1 in 1 day 1 in 2 days 1 in 4 days
Commercial Cream	44.6 (1 day)	1 in 5 days 2 in 6 days

The percutaneous toxicity studies were carried out in the usual manner on groups of female albino rabbits. No attempt will be made here to describe in detail the methods employed since they are described elsewhere[16]. It is sufficient to say that the products were applied to the skin (after clipping the fur) in amounts equivalent to 600 mg/kg. per day for ninety days. Based on consumer usage figures, this represents 50 times normal daily usage. If skin area is considered, the amount applied in these tests represents about a two to four fold margin of safety.

The products tested here were the same as those tested for eye irritation as shown in Table I except that a water control replaced the commercial cream. Unfortunately, as sometimes happens in these tests, several animals died during the course of the applications from causes completely unrelated to the materials being tested. The validity of this statement is shown by the fact that the second largest death rate was in the water control group.

Data gathered in this experiment are shown in Tables II and III. Table II gives information as to

(*Continued on page 244*)

TABLE II
90 DAY PERCUTANEOUS TOXICITY STUDY

Group	Treatment	Dosage g/kg/day	No. in Group	Deaths No.	Deaths Weeks	Weight	Hematology
1	$Al_2(OH)_5Cl$ $ZrOCl_2$ Cream	0.6	8	1	6	Normal	Normal
2	$Al_2(OH)_5Cl$—Lotion	0.6	8	2	7,12	Normal	Normal
3	Commercial Lotion	0.6	8	4	5,5,7,8	Normal	Normal
4	Water	0.6	8	3	7,7,11	Normal	Normal

TABLE III
90 DAY PERCUTANEOUS TOXICITY STUDY

Group	Treatment	Survivors	Gross Findings (No. of Animals) Skin[1]	Biliary Ducts[2]	Kidneys[3]	Histology No. of Animals Aorta[4]	Liver[5]
1	$Al_2(OH)_5Cl$ $ZrOCl_2$ Cream	7	7	1	0	1	4
2	$Al_2(OH)_5Cl$—Lotion	6	6	1	0	0	0
3	Commercial Lotion	4	4	1	0	0	0
4	Water	5	0	2	2	0	1

[1] Varying degrees of skin thickening and hyperkeratosis
[2] Dilated fibrotic biliary ducts in liver tissue
[3] Surface pitting of kidneys
[4] "Subintimal deposits of athermatous lipoid material in the aorta"
[5] "Alterations of questionable significance consisting of granularity of the cytoplasm and cellular vascuolization, findings not uncommon in laboratory animals."

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Perfumer's Shelf

The Sense of Smell

Though the sense of smell in human beings is far less acute than in many animals, it still plays an important part in our lives, giving warning or pleasure, or aiding in the development of conditioned reflexes. Less is known about olfaction than the other senses partly because it was for some time neglected and partly because it is particularly hard to investigate. But information can be obtained experimentally in various ways: for example, parts of the central nervous system thought to be related to the sense of smell can be removed to see what effect this has on nerve tracts, behavior, and the ability to form or maintain conditioned reflexes.

In man the olfactory area automatically comes into contact with both inspired and expired air, which is not the case in all animals. The actual sensory epithelium lies on the conchae and occupies some 6 sq. cm. on either side. In this area are packed masses of long cells whose nuclei lie deep to the surface and from whose exposed ends fine hairs project into the mucus and fluid bathing the nasal membranes. Scattered among the sensory cells are the small openings of Bowman's glands whose secretion spreads over the epithelium. The composition and function of this secretion are unknown, but since the glands are found only in the olfactory area it is apparently important. Another feature of all olfactory areas in all species is that they are pigmented yellow or brown and that acuity of smell is related to the depth of pigmentation; thus, for instance, albinism and anosmia are related.

Man, to whom smell is of limited importance, can nevertheless distinguish between thousands of different odors; but how he does so is by no means clear. Histologically the sensory cells look alike so that it is not possible to base a system of selective reception on structural grounds. Discrimination may in small part be due to topographical factors. A sniff will carry the inspired air into deeper parts of the nasal cavity where the special cells lie, and according to the distribution of the air and the type and solubility of the odorous material, so a varying number of the cells will be more or less stimulated. Moreover, discrimination may partly depend on the accessibility of receptors and on the rate of diffusion of odorous particles. Adrian found that organic esters tend to produce a rapid response in the front of the mucous membrane and the hydrocarbons a slower one at the back. As well as the spatial discrimination, there may be chemico-structural differences in the cells which enable them to respond differently to different substances; and, in fact, Adrian has produced evidence in support of this view. Using odorous substances in high dilution, he found that they varied in the threshold concentration at which they evoked a certain type of axon spike from cells which also differed in the latent period of their response.

Another supporting point is found in preferential anosmia in which the ability is lost to appreciate certain smells but not others. Other theories of olfaction are based on the physical (water or lipid solubility) or chemical properties of the odorous substances. The receptor cells are probably stimulated by particles of the odorous substance, of which only minute amounts are needed to give the sensation of smell. Baradi and Bourne lately suggested that odorous substances may initiate impulses by inhibiting one or more of the enzyme systems present in the receptor cells.

In common with other senses, smell is subject to adaptation, and moreover, a particular odor may increase or decrease the sensitivity to another odor that follows it. It has been suggested that all odors are built up of a small number of fundamental ones: thus, if two smells have a fundamental odor in common each should exert a strong adaptation effect on the other. If the underlying hypothesis is untrue, then severe adaptation would never be observed with a pair of noticeably unlike smells. Moncrieff found that nearly similar smells—e.g., amyl and butyl acetate—did cause confusion in detection when smelled one after the other, showing that similar smells from different chmical entities clearly share a part of the olfactory apparatus. He also found that self-adaptation was always more powerful than heterogenous adaptation. sometimes even when the heterologous pair were as similar as *n*- and sec-butanol. Some similar smelling pairs behaved to each other rather oddly: adaptation with A might have a much greater action on the threshold concentration of B than adaptation with B had on A. Allowing that the primary stimulus consists of the adsorption of the odorous molecules on the olfactory membrane, this apparent anomaly can be explained by a spatia pattern of adsorption and by differing numbers of receptor sites for A and B, only some of which are held in common. Adaptation seems to be central rather than peripheral: for instance, unilateral stimulation can cause bilateral fatigue. Experiments involving ablation or stimulation of central areas showed clearly that there are two distinct olfactory systems—one cortical and the other subcortical. The cortical system is concerned with judgment and fine discrimination and the subcortical one with simpler discrimination and more automatic activities.

The significance of a sense of smell is easier to define. In the lower animals it helps them to find their food and their mates, and to avoid their enemies; and it has presumably developed from the primitive chemical sensibility of unicellular organisms. By means of specially developed glandular secretions scent may act as a deterrent to aggressores, as it does in the skunk. There is also some evidence that poisonous food may be recognized by smell. In man the significance of smells is largely ac-

quired and becomes built into the unconscious or automatic part of the nervous system. To man smells are useful in stimulating a good preparatory flow of gastric juice and in giving esthetic and remembered pleasure. Those who have by accident lost the sense of smell know how much it adds to the savor of food.—*The Lancet* 271:1250, 1956.

Aerosol Perfumes

One per cent solutions of the most important essential oils and perfume compounds were tested for their odor stability in a mixture of equal parts by volume of absolute alcohol and propellant. The aerosol samples were tested at intervals of about four weeks by various perfumers. The sprayed perfume is not altogether suitable for testing as it remains too long in suspension. Quicker results can be obtained by spraying on to strips of filter paper, and by this method there is the opportunity of comparison with freshly prepared solutions of the perfume. However, an assessment of the aerosol mist as well is also to be recommended to round off the general impression.

The following essential oils proved good or very good: bergamot and terpene-free bergamot, cedarwood, lemon (partly deterpenated and terpene-free). Bourbon and African geranium, lavender, lavandin, patchouli, petitgrain, East Indian sandalwood, orange (partly deterpenated), Bourbon vetiver and Madagascar ylang ylang oil.

With some of these oils the odor can be said to mature. This was observed with Bourbon geranium, sandalwood and patchouli oil. West Indian lime oil proved completely unusable since it developed in unpleasant terpenel odor.

Among synthetic perfumes, anisyl alcohol, citronellol, geraniol, linalol, phenyl ethyl alcohol and terpineol kept unchanged.

Of the phenols, *p*-cresol remains unchanged, while eugenol and isoeugenol appear to mature.

The aldehydes *n*-octanal, *n*-decanal, 2-methyl undecanal, anisaldehyde, amyl cinnamic aldehyde all kept well.

Among the esters, benzyl acetate, geranyl acetate, geranyl butyrate, linayl acetate, methyl anthranilate, methyl heptine carbonate, *p*-cresyl acetate, styrolene acetate and vetivenyl acetate showed a remarkable maturing of odor.

The lactones (nonalactone and undecalactone) did not show any change. Likewise the ketones, methoxy-acetophenone, methylnonyl ketone and all the ionones kept very well.—Krenowsky, *Parf. U. Kasm.* 37:236, 1956, through *Manuf. Chem.*

Perfume Solubilization

It is a well-known fact that high concentrations of certain soluble soaps have the power to render aromatic oils miscible with water in such a way that the oil phase is not detectable by ordinary visual examination. In recent years, new surface-active agents have come to the fore, and by their use transparent dispersions of oils in water can be prepared which are more stable and which cover a wider range of application than do such dispersions formed with ordinary soaps. These surface active agents are finding increasing use in the perfumery industry because the use of solvents other than water is expensive, often undesirable, and in some instances not possible because of the very nature of the product.

The phenomenon of solubilization has been the focus of much study, and detailed reviews of this complex subject should be consulted. The following generalizations may be made as far as the surface-active agents are concerned.

(a) In an homologous series the amount solubilized decreases as the chain length of the solubilizate increases.

(b) Increase in polarity of the solubilizate tends to increase the amount solubilized.

(c) Unsaturation and cyclization in a solubilizate also tends to increase the amount solubilized.

(d) The addition of inorganic salts to solutions of surface-active agents increases the amount of non-polar and decreases the amount of polar substances solubilized.

(e) In a non-ionic series, the more lipophilic members favor maximum solubilization of low polar substances, and the more hydrophilic members favor solubilization of substances which are more polar.

The surface-active agents most generally useful as solubilizing agents are pre-eminently the non-ionics, and to a less extent quaternary ammonium compounds and alkylolamides. Sulfated alcohols and alkyl aryl sulfonates do not possess any of the specialized qualities evidenced by the quaternary ammonium compounds and the alkylolamides.

Non-ionic compounds are almost wholly derived from ethylene oxide and have a structure where "R" represents a lipophilic radical containing at least eight carbon atoms such as alkyl, aryl, alkyl phenyl radicals and recently lipophilic polypropylene glycol chains of molecular weight greater than 1000. It is clear that these compounds are polyethers and it is upon this structure that their properties primarily depend. Care must be taken, however, to avoid adding perfumes solubilized in nonionics to phenolic based bactericides as inactivation may take place.

Perfumery materials solubilized in a quaternary are incorporated in the cation, a point of scientific value, but of little significance practically. Their principal use is not so much as detergents, but as very powerful bactericides. As many bactericides incorporating quaternary ammonium compounds require to be perfumed, their secondary property of being excellent perfume solubilizers is very useful. Owing to the fact that quaternary ammonium compounds are of the opposite charge to the anionic compounds, they are incompatible with these products. It is, therefore, not possible to blend perfumes previously solubilized in quaternary ammonium compounds with any incorporated in anionics. However, nonionics and quaternary ammonium compounds are perfectly compatible.

The alkylolamides are prepared by heating excess diethanolamine with appropriate fatty acids. The commercial product, which is soluble in water, is a carefully balanced mixture of acyl diethanolamide, diethanolamine soap and free diethanolamine. Like the nonionics, these compounds are compatible with quaternary ammonium compounds subject to certain reservations. Products do, however, appear on the market in which the anionic soap content is very high and products of this type nullify the activity of quaternary ammonium compounds.

In the case of the non-ionics, solubilizates of low polarity are incorporated to the largest extent in agents of more lipophilic character, and solubilizates of high polarity tend to reach a maximum solubility in, say, a hexadecyl polyoxyethylene glycol ether with from 18 to 24 oxyethylene units.—C. D. Moore and M. Bell. *S.P.C.* 30:69, 1957.

V-Cillin-Sulfa (Lilly) is a dry powder mixture to be converted into a suspension with water before use. The pineapple flavor is a "locked in" preparation. Each teaspoonful of the reconstituted preparation contains 125 mg. or 200,000 units of penicillin V and 167 mg. each of sulfadiazine, sulfamerazine, and sulfamethazine, buffered with succinic acid and sodium citrate.

Industry's Books...

Computers, Their Operation and Applications, *by Edmund Callis Berkeley, President Berkeley Enterprises, Inc., and Lawrence Wainwright, M.Sc., Ph.D., Consultant, 366 pp., Reinhold Publishing Corp., New York, (1956), cloth* **$8.**

Newest developments in both the techniques and equipment of automatic computing are described, illustrated and compared in this book. Here you will find the practical, down-to-earth information you need on exactly how these machines work and what they can do. All the basic elements of digital, analog and miniature computers are fully explained, as are such important considerations as computer reliability, advantages, limitations and maintenance.

Steric Effects in Organic Chemistry, *Edited by Melvin S. Newman, 710 pp., John Wiley & Sons, Inc., (1956) cloth,* **$12.50.**

In this book laboratory workers and theoretical chemists will find the first thorough discussion of an area of growing importance in modern organic chemistry. The study of steric effects in recent years has already cleared up a number of troublesome questions relating to the influence of structure on the properties and reactivity of molecules. The essays collected in this book show the usefulness in the laboratory of an appreciation of steric effects. They also produce a foundation for further expansion and clarification in the field. This work offers a guide to the utilization of steric factors in such matters as the slowing down of hydrolysis rates, the prediction of reaction rates, and the determination of light absorption characteristics in a compound or product.

The Historical Background of Chemistry, *by Henry M. Leicester, 260 pp., John Wiley & Sons, Inc., New York, (1956), cloth,* **$6.**

This work follows the development of chemistry through the thoughts and ideas of chemists rather than through the details of their lives. Students, chemists and lay readers are shown something of their debt to their predecessors. The author describes some of the more important areas in which chemistry has influenced world history and others in which the conditions of the world have had an influence on the chemist himself. Clearly reflecting recent research into the pre-alchemical and alchemical periods when chemistry was not recognized as a science in its own right, the book considers these early years in great detail.

Latex Natural and Synthetic, *by Philip G. Cook, Technical Superintendent General Latex and Chemical Corp., 231 pp., Pocket Size, Reinhold Publishing Corp., (1956), cloth,* **$3.50.**

The purpose of this book is to show how both natural and synthetic types of rubber latex are produced, modified, and finally converted into useful products. Contents: 1. Introduction. 2. Development of Latex to its Present Form. 3. Latex Production and Importation. 4. Testing of Latex Prior to Use. 5. Vulcanization of Latex. 6. Compounding: Materials Affecting Liquid Properties. 7. Compounding: Materials Affecting Film Properties. 8. Processing and testing of Compounds. 9. Synthetic Rubber Latices. 10. Rubber-Plastic Latices. 11. Latex Products—Unsupported Films or Filaments. 12. Latex Products — Coatings, Binders, and Saturants.

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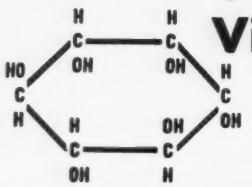

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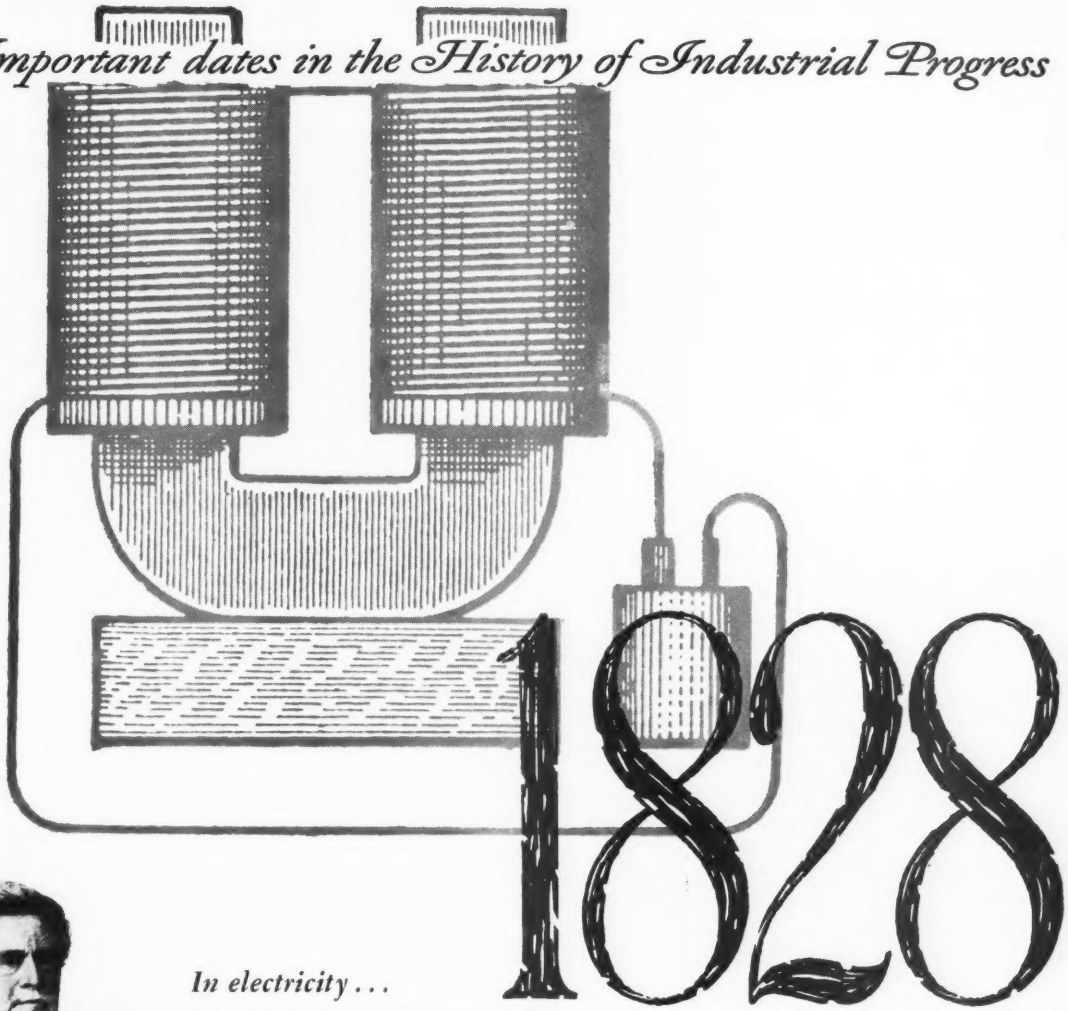

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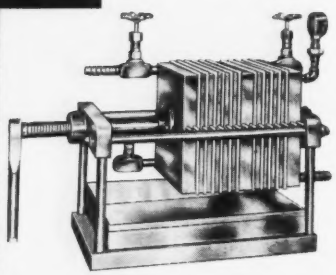

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(*Continued from page 238*)

dosage, deaths and when they occurred, weight and hematology. In each group, the weight of the animals was normal throughout the test and initial and final blood examinations revealed no changes. Table III shows the number of animals surviving the ninety day period, all of which were sacrificed at that time, and the number of these showing pathological changes either on gross or microscopic examination. The only significant finding was the varying degrees of skin thickening and hyperkeratosis which is to be expected upon the application of an astringent salt. Some of the liver specimens examined exhibited alterations of questionable significance consisting of granularity of the cytoplasm and cellular vascuolization, findings not uncommon in laboratory animals. No severe degenerative changes were observed.

Finally, and probably of greatest importance so far as a product of this type is concerned, the reaction of the human skin was determined by a repeated patch test technique similar to that discussed by Draize[16]. The patch was a swatch of washed cotton flannel on which was spread 0.2 ml. of the cream to be tested. The patch was held to the skin with an Elastoplast Coverlet. Test patches were applied for 24 hours, three times a week for a total of nine applications. If, during the course of these applications, a grade 3 reaction was found, the next patch with this material was moved to an adjacent site. If a second grade 3 reaction occurred, the material was omitted on that subject for subsequent applications. After completion of nine applications, a two-week rest period was allowed before applying challenge patches. These were applied on the original *and* an adjacent site in each case.

The scale used in grading the reactions is shown in Table IV. It is a familiar one used in such tests.

TABLE IV

0	No evidence of irritation
1	Slight erythema
2	Marked erythema
3	Erythema and papules
E	Erythema and Edema
4	Erythema, Edema, and Papules
5	Vesiculation
6	Strong reaction spreading beyond test site

The results of one series of patch tests is presented in Table V which shows the number of each grade reaction at the first and the ninth applications. A commercial cream is included for comparative purposes. It is obvious that the continued application of the commercial cream results in an increase in severity of reaction. This is also true of the cream containing zirconium oxychloride but to a considerably reduced extent. The increase in reaction upon successive applications is not unexpected and is found to occur with many classes of products. One need not become alarmed on this score unless the types of reactions become very severe.

Upon applying challenge patches two weeks later

(*Continued on page 250*)

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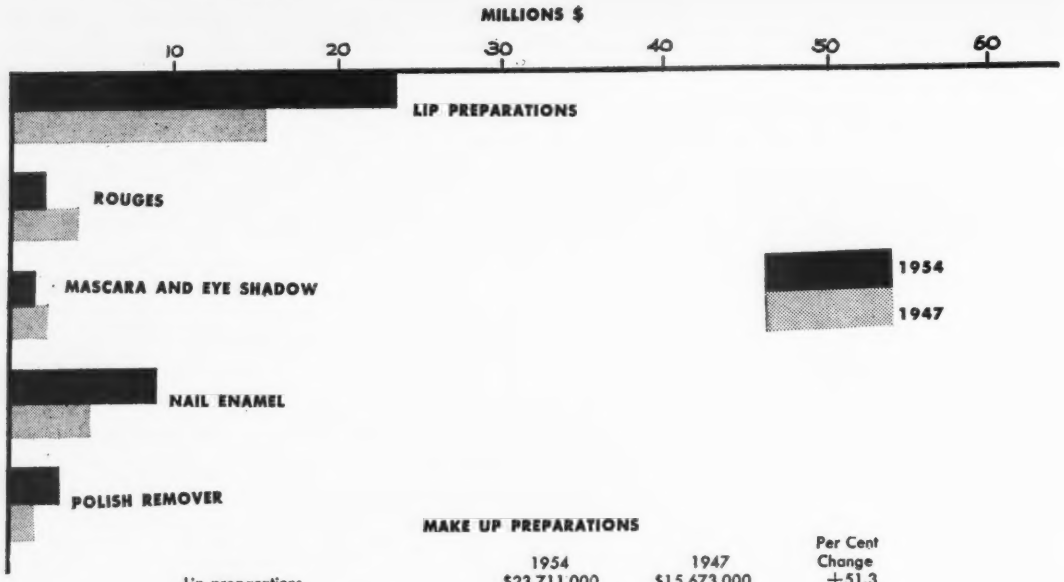
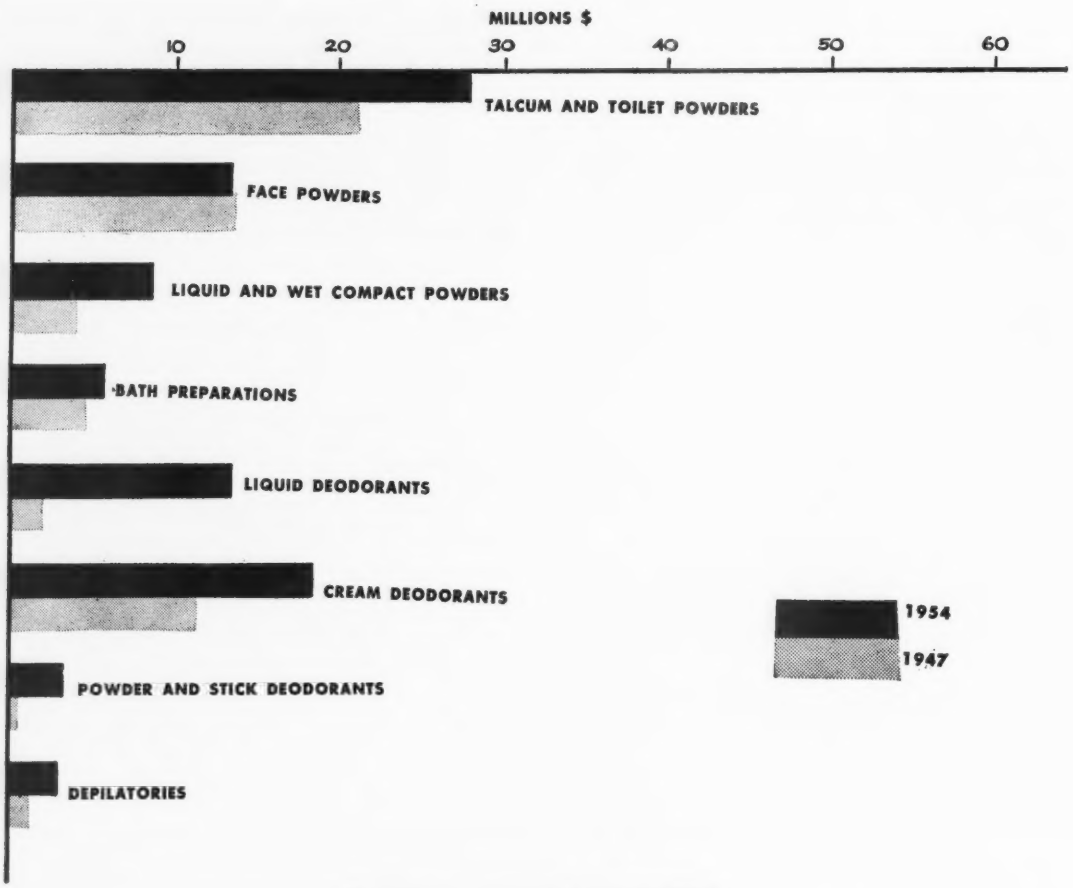
(Continued from page 159)



MAKE UP PREPARATIONS

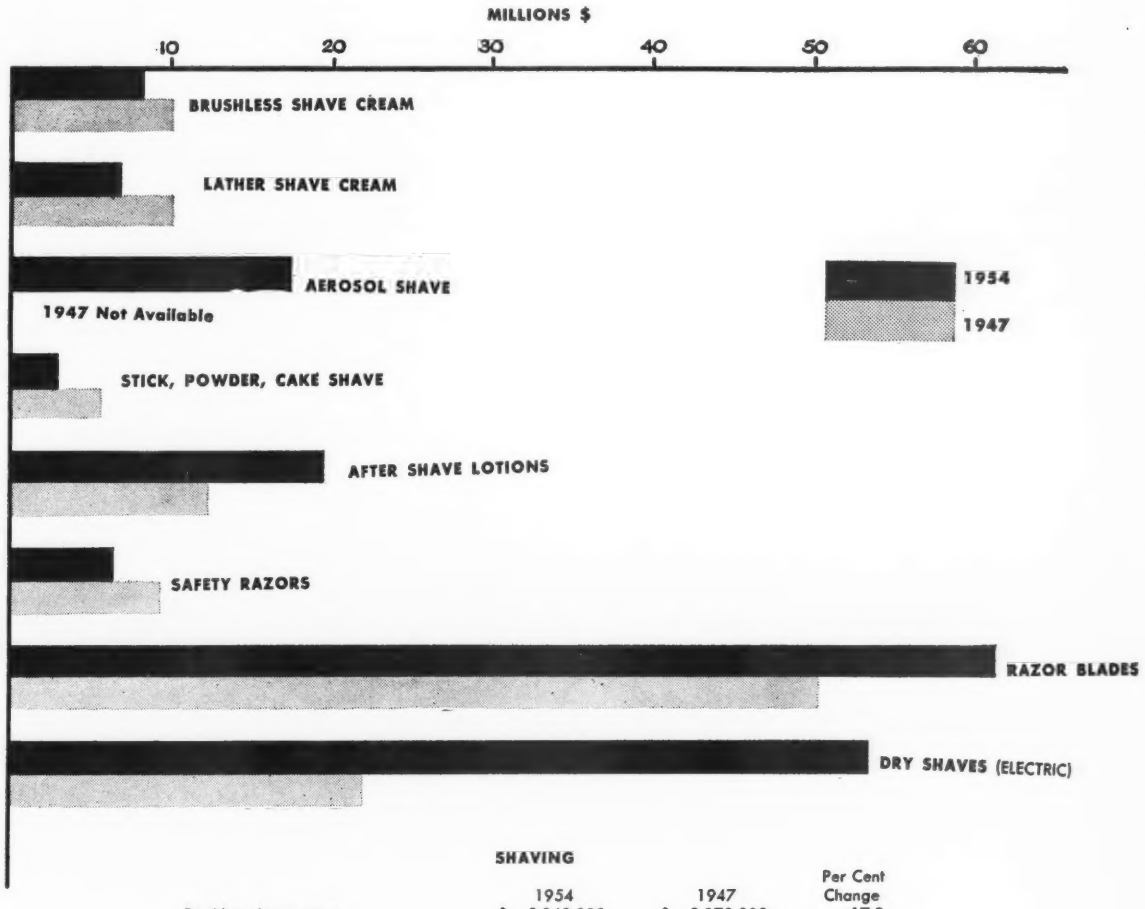
	1954	1947	Per Cent Change
Lip preparations	$23,711,000	$15,673,000	+51.3
Rouges	2,056,000	4,041,000	—49.1
Mascara and eye shadow	1,440,000	2,270,000	—36.9
Nail lacquers	9,146,000	5,107,000	+78.6
Polish removers	3,241,000	1,572,000	+106.1
Other manicure preparations	638,000	535,000	+19.2
Total	$40,232,000	$29,198,000	+27.4



POWDERS AND HYGIENIC PREPARATIONS

	1954	1947	Per Cent Change
Talcum and toilet powders	$27,957,000	$21,370,000	+31.0
Face powders	13,205,000	13,665,000	—3.3

POWDERS AND HYGIENIC PREPARATIONS (continued)			
Liquid and wet compact powders	8,639,000	3,846,000	+124.4
Foot powders	675,000	628,000	+7.5
Other powders (cream, sachet)	5,191,000	4,734,000	+9.4
Bath preparations	5,609,000	4,620,000	+21.3
Liquid deodorants	13,457,000	1,982,000	+579.0
Cream deodorants	18,510,000	11,465,000	+61.7
Powder and stick deodorants	3,174,000	436,000	+627.0
Depilatories	2,964,000	1,118,000	+165.3
Total	$99,381,000	$63,864,000	+55.5



SHAVING			
	1954	1947	Per Cent Change
Brushless shave cream	$ 8,249,000	$ 9,972,000	—17.3
Lather shave	6,799,000	10,027,000	—32.2
Aerosol shave	17,434,000	Not Available	
Stick, powder, cake	2,916,000	5,405,000	—46.1
After shave lotions	19,524,000	12,297,000	+58.9
Other shaving preparations	298,000	1,011,000	——
Dry shavers (electric)	53,809,000	22,009,000	+142.1
Safety razors	6,309,000	9,644,000	—34.6
Razor blades	61,520,000	50,337,000	+22.2
Total	$176,858,000	$120,702,000	+46.5

TOTAL OTHER COSMETICS AND TOILET PREPARATIONS			
	1954	1947	Per Cent Change
Creams, lotions, oils	$ 84,361,000	$ 57,332,000	+47.2
Make-up preparations	40,232,000	29,198,000	+27.4
Powders and hygienic preparations	99,381,000	63,864,000	+55.5
Brushless shaves	8,249,000	9,972,000	—17.3
After shave lotions	19,524,000	12,297,000	+58.9
Other shaving preparations	298,000	1,011,000	——
Other cosmetics and toiletries	6,327,000	16,315,000	——
Other cosmetics and toilet preparations, not specified	8,079,000	Not Available	——
Total	$266,451,000	$189,989,000	+40.5

Amerchols®

LANOLIN CHOLESTEROLS in their most active form.

The Amerchols are non-ionic, natural EMULSIFIERS, PENETRANTS and EMOLLIENTS made from pure lanolin. They will help you achieve superior cosmetic and pharmaceutical formulations by markedly improving stability, texture, appearance and effectiveness.

An Amerchol such as multi-sterol, liquid **Amerchol 101** enhances softening, penetrating and spreading activity while holding desirable moisture to the skin. The surface active Amerchols function at the interface in oil-in-water emulsions to bring about these unique effects on skin and hair.

The Amerchols are ideal, stable ointment bases which induce rapid drug release, and promote optimum healing rates.

WE KNOW OF NO CASE OF AN ALLERGY DUE TO AN AMERCHOL.

AMERCHOL — AMERICAN CHOLESTEROL PRODUCTS, INC.

American Cholesterol Products
• INCORPORATED •
AMERCHOL PARK EDISON, NEW JERSEY

Write on your business letterhead for technical literature and suggested formulas.

Readers' Questions . . .

Percentages and Parts: *I am confused by formulas which are given as parts but do not say whether ounces or grams should be used. Many formulas I see do not add up to 100 per cent and how can these be made in terms of percentages?* HOLLYWOOD.

This question has been repeated a number of times and we hope to be able to give an answer here that will resolve difficulties. When a formula is given in numbers, without any indication as to weight units it can best be handled by weighing each separate item in the same units, as grams, ounces, pounds or kilos. This goes for both liquid and solid ingredients and, if the formula is workable in the first place, the result should be as intended. Under these circumstances it makes no difference whether or not the formula adds up to 100. When the total is 100, the individual components may be expressed directly as percentages. Until familiarity with the formula is obtained, do not weigh solids and measure liquids, which can be done where it is known that slight changes will not matter.

External Pain Relievers: *Some of the newer lotions and ointments claim to penetreate the skin and exert a deep effect on pain and to cause local stimulation. Can you give us any comments as to the validity of these claims and the reasons behind them?* NEW YORK.

One of the preparations now being widely promoted is said to contain benzocaine, salicylamide and isopropyl alcohol in a lotion and the active ingredients are claimed to penetrate through the skin. We cannot, of course, comment on products being marketed, as much for lack of specific knowledge as for other reasons, but we can make some general observations that may be helpful. We are very much inclined to the belief that some compounds penetrate the intact skin, others do not, depending upon their relative solubilities in both oil and water. The vehicle has less influence, however, sometimes improving or retarding the penetration of compounds that usually penetrate the skin, but seldom changing a non-penetrating compound to one that will penetrate. The vehicle may be useful in that it is a solvent for or miscible with the lipid layer customarily present on the skin surface and permits better contact between the medicinal and the actual skin surface. Strong alcoholic solutions, for example, and those containing suitable wetting agents, would

promote percutaneous absorption. Salicylate esters are known to penetrate into the blood stream when applied to the skin and exert an analgesic effect. Claims have been made that a vanishing cream containing 10 per cent of diethylamine salicylate relieved rheumatic pains. It is possible that benzocaine in an alcoholic solution will penetrate sufficiently to show anesthetic action even on intact skin. Finally, some of the nicotinic acid esters have been shown to have a local stimulating action that might facilitate absorption into the blood stream.

Foot Cream: *Can you suggest formulas for a foot cream that might be effective in treating athlete's foot?* CHICAGO.

Active ingredients in preparations of this type include zinc propionate, zinc undecylenate, both of which should be checked for a possible patent preventing their general use, and mixtures of p-hydroxybenzoic acid esters. A representative oinment formula is the following:

Zinc undecylenate	20.0
Undecylenic acid	2.0
Lanolin	20.0
Absorption base	25.0
Petrolatum	18.0
Water	15.0

Soap Shampoo: *We would appreciate your assistance in the development of a good soap shampoo that lathers well and does not cloud in the bottle.* CLEVELAND.

A representative formula is given on page 190 of Keithler's book "The Formulation of Cosmetics" and is as follows:

Olive oil	3.0
Coconut oil	21.0
Caustic potash	4.1
Caustic soda	1.9
Alcohol	15.0
Water	84.0
Perfume	0.5
Sequestering agent	0.5

The alkalies are dissolved in sufficient water to make a 50 per cent solution, the fats and oils are melted together and allowed to stand until cool and then the alkali solution is poured in a thin stream into the melted fats. Perfume is added to the alcohol which is added to the soap solution and the mixture allowed to stand overnight. The rest of the water is added at this point, the mixture is aged for two weeks and filtered at 40° F. The sequestering agent, ethylene diamine tetraacetic acid is added to prevent clouding by calcium salts leached from the glass bottle. About one per cent of an alkylolamide is also useful in preventing precipitation of unsaponified matter.

Modulan®

The MODIFIED LANOLIN with new properties.

Modulan is the acetyl derivation of pure lanolin containing all the constituents of lanolin, modified by a unique treatment to impart NEW and VALUABLE PROPERTIES. (U. S. Patent No. 2,725,334)

Modulan forms clear solutions even in cold mineral oil and deposits hydrophobic, emollient films on skin and hair. These desirable protective films are waxy rather than tacky and are very pleasant to the touch.

Modulan is extremely hydrophobic—does not form greasy emulsions and is practically odorless. Because of its outstanding stability and compatibility with oil-in-water emulsions and with soaps and shampoos. Modulan is particularly recommended for use in creams, lotions, baby products, hair preparations, make-up, and ointments.

CLINICAL INVESTIGATIONS HAVE INDICATED THAT MODULAN IS HYPO-ALLERGENIC.

AMERCHOL — AMERICAN CHOLESTEROL PRODUCTS

American Cholesterol Products
• INCORPORATED •
AMERCHOL PARK EDISON, NEW JERSEY

● ACETULAN—T. M. *a new chemical design for cosmetics—COMING SOON!*

(*Continued from page 244*)

to all 54 subjects, there were no reactions greater than grade 1 to either of these products. Hence, there is no suggestion of sensitization to either cream.

The mildness of the buffered zirconium oxychloride-aluminum chlorhydroxide cream was tested on 107 additional subjects with essentially the same results—a few grade 1 and 2 reactions after nine applications and no response on challenge.

TABLE V
PATCH TEST RESULTS

First Application

	No. of Subjects	Grade 0	Grade 1
$Al_2(OH)_4Cl$—$ZrOCl_2$—Cream	54	53	1
Commercial Cream	54	53	1

Ninth Application

	No. of Subjects	Grade 0	Grade 1	Grade 2	Grade 3	Not Patched
$Al_2(OH)_4Cl$ $ZrOCl_2$ Cream	44[1]	38	4	0	0	2[2]
Commercial Cream	44[1]	6	15	2	2	19[2]

[1] There were 10 absentees on the day of this application.
[2] These subjects were not patched because of having reached grade 3 reactions twice during previous applications.

There has recently appeared[17] a report of several cases of a severe type of irritation of the axillae in which the investigators suspected that the use of a deodorant stick was the proximal cause. Since a zirconium salt (sodium zirconium lactate) was included in the formula for this product, zirconium was indicated as the probable offending agent. Our own work, and actual use of this cream containing zirconium oxychloride by consumers over a period of more than a year contradicts this allegation. If the eruptions cited were actually induced by the deodorant stick, it seems assured that something other than the zirconium itself was the offending agent.

Summary

A deodorant cream formula, incorporating a new antiperspirant material, zirconium oxychloride, is highly efficaceous in inhibiting perspiration. Zirconium oxychloride is safe for such use as measured by the pharmacological tests generally accepted for cosmetic products.

Acknowledgment

Data presented throughout this paper were obtained from reports of the Hill Top Research Institute, Miamiville, Ohio.

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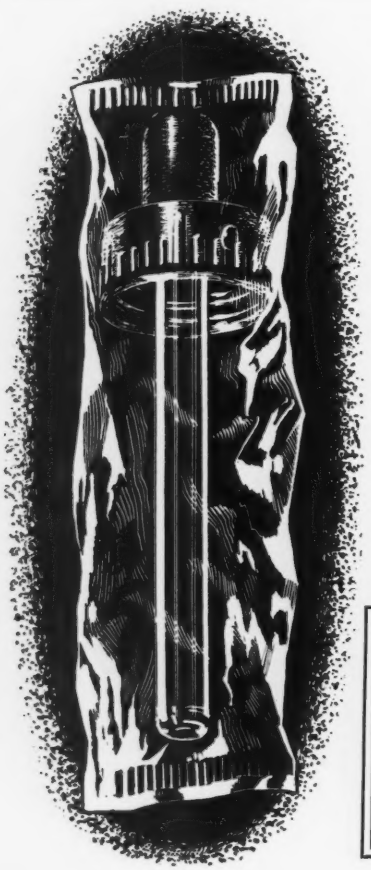

Colonial

CELLOPHANE DROPPER ASSEMBLIES

We've been placing particular stress on cellophane packaging, here at Colonial Applicator Co. Consumers like that clear, fresh look . . . that sparkling "top-of-the-morning" freshness that catches the eye and clinches the buy. Better still—that gleaming cellophane wrapper is a guarantee that the dropper is going to stay spotless and dust-free right to the ultimate consumer.

Colonial's cellophane pack is good insurance against breakage in side by side packaging . . . keeps droppers safe and sound without special gimmicks in box construction. The cost is only a fraction of a cent per unit. For a little more, your own printed message can be placed on the cellophane.

Let us make free samples to your exact specifications.

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Harry M. Graber, 811 S. 53rd St., Philadelphia, Pa. GRanite 6-6311

Allen J. Gretsch, 327 S. LaSalle St., Chicago, Ill. WAbash 2-1619

Gabler & Gabler, 435 S. LaCienega Blvd., Los Angeles 36, Cal. BRadshaw 2-2995

COLONIAL APPLICATOR COMPANY

VINELAND, NEW JERSEY

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RESEARCH IN DIRECT MAIL ADVERTISING

(Continued from page 161)

ceutical houses do not sell direct to doctors. They depend upon the effectiveness of their detail staff, direct mail, sampling, journal advertising and other forms of promotion to create demand by doctors' prescriptions or through their purchases through the pharmacies for office use. Approximately 20,000 field representatives are employed by the leading pharmaceutical manufacturing houses. Some companies in the United States employ as many as 1,000 detail-men and a commensurate number abroad.

Other forms of promotion, such as direct mail, sampling, and medical journal advertising have increased appreciably in the past few years. This increase has been better than 50 to 75 per cent since 1950.

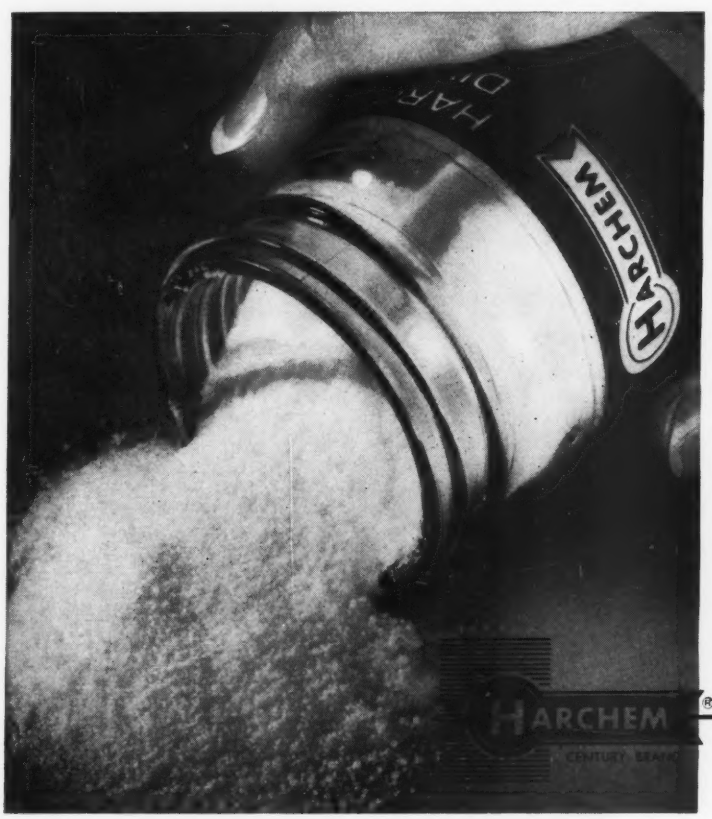
As a consequence, the competition for what has been termed "disposable professional time" has become acute. Disposable professional time is that length of time per day or per week which the physician allots to communications from our industry.

A recent survey[5] has shown that the average physician in 1952 devoted 3.39 hours per week to detailmen and to reading medical journal advertisements and direct mail. In 1956, however, this had dropped to 2.05 hours per week. This is just about 32 minutes per day. It was also discovered that there is one doctor in ten who never sees a detailman. A quarter of them do not read their journal advertising. Two doctors out of five do not read their direct mail.

There are other important but less competitive and perhaps less productive forms of medical communication. These include clinical articles in medical journals, convention displays, scientific exhibits, symposia, teaching films, house organs, closed circuit TV and medical newspapers. To all of these forms of communication the average physician devotes 5½ hours per week, but less than half of this time to strictly commercial material.

Direct mail is employed heavily but not always wisely by the pharmaceutical industry. There are a number of companies whose commercial success in the past and even now is due in large measure to the effectiveness of their direct mail advertising. Others abuse it.

The average physician receives about 15 pieces of mail per day. This represents an increase of 39 per cent over four years ago. Some of these direct mail pieces are multicolored, informative, and helpful



CENTURY BRAND

beaded fatty acids and glycerides are dust-free

Customers report that they prefer to use Century Brand *beaded* fatty acids and glycerides. Beads do not break during handling or shipment to create nuisance dust that can cause employee discomfort and plant clean-up problems.

Century Brand fatty acids are made in every grade required by industry. The quality of each grade is carefully maintained to assure that no customer will receive off-grade materials. Harchem Division can supply Century Brand fatty acids in any desired quantities at competitive prices.

Ask for a free sample of the Century Brand *beaded* fatty acids suited for your application. Your requests will be answered promptly.

HARCHEM DIVISION
WALLACE & TIERNAN INC.
(SUCCESSOR TO: W. C. HARDESTY CO., INC.)
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

H-28

brochures. Many are of real interest to the ever-curious doctors. Many are carefully read and some filed. However, nearly half of them are cheap post cards or self-mailers, designed as quick "reminders." Most of these find their way only to the basket and are wasted. Many doctors hesitate to discard direct mail unread. One quarter of the mail directed to him promotes new products.

The industry tries to determine the average physician's reaction to this direct mail and to evaluate its effectiveness. A number of studies over the past few years have shown that mass and repetition have not contributed to its effectiveness as promotion.

About two thirds of all doctors look at their mail each day. However, only one in four or five view it as a primary source of information on products. Consequently, advertising managers still face an increasingly serious problem. They hope to discover how to capture and keep the doctor's attention. They want to learn how to turn a "glance" into a long look, a desire to retain the promotional material, and eventually into prescription specification or recommendation.

We all believe that our advertising is honest, believable, interesting and attractive. Whether it is read by physicians to whom it is directed, and whether it influences doctors to prescribe our products cannot easily be determined. However, pharmaceutical advertising is recognizing the need for research and control studies in order to evaluate and improve its effectiveness.[6]

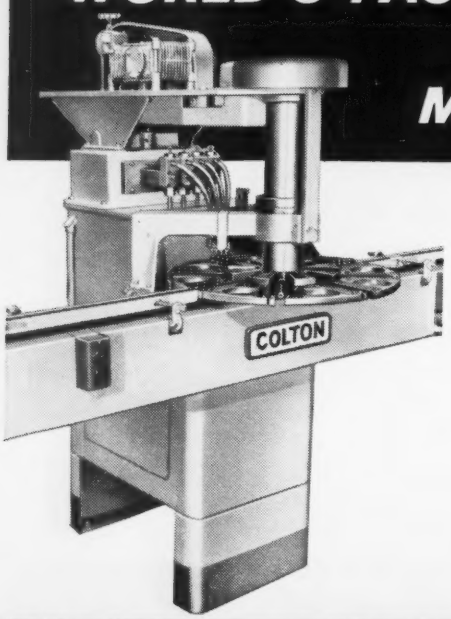
This is being accomplished by media research, market research, motivation research, opinion research and the establishment of physician panels. This includes the development of motivation analyses, determination of potentials of advertising effectiveness, measurement of successful advertising performance, and the development of improved bases for estimating the effectiveness of approaches and media in specialized fields.

There are many instances where a cross section of physicians' reaction and opinion can be of value in the preparation of medical promotion. These terms "reaction" and "opinion" are not synonymous. We have asked physicians in panels and by questionnaire about certain of our promotional novelties. From the doctors' response we have been able to determine how effective they will be or actually were. In some advance studies, we succeeded in eliminating in advance possibly controversial aspects when the advertising matter was released nationally.

Motivation research has applicability to any form of marketing. We may be certain that human emotions play just as important a part in determining a physician's preference as it does in influencing a druggist's order or the purchase of the consumer.

There is apparently one distinction between advertising to the physician and to the consumer. Gen-

WORLD'S FASTEST, MOST ACCURATE, MOST VERSATILE MULTIPLE LIQUID FILLER



1. Up to 480 containers a minute
2. Accurate to less than 1%
3. Fills any liquid, alcohol to cream oil
4. Completely adjustable in *every* respect
5. Patented dripless suck-back, adjustable to viscosity
6. Nozzles adjustable for container height and width
7. Simple air bleeder
8. No container—no fill
9. Special adaptations available
10. Quick disassembly for sterilizing
11. Completely automatic

For efficiency, performance, economy, nothing on the market approaches this Colton No. 124-126-128-132.

ARTHUR COLTON COMPANY
DIV. SNYDER TOOL & ENGINEERING COMPANY

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erally, the consumer's emotions may be appealed to directly. However, it is believed that physicians have a "self-image,—"a feeling that they are rational and logical, especially in prescribing. Thus a pharmaceutical to be prescribed must be presented "for the doctor." As far as possible it must also reflect the personality of the company in an aura of professional service.[7]

From time to time at Schering, the Advertising Division with the cooperation of our Management Research Department studies the reaction of physicians to individual types of our direct mail advertising. One such study selected from our records illustrates how easy it is to roughly determine the acceptance and retention of promotion and to take steps to improve it.

A specific direct mail piece entitled "The Male Climacteric" was selected. This booklet discussed a condition which affects many men in their advancing years, the "male menopause." It dealt with the current concepts of diagnosis and treatment of the condition with the male hormone, testosterone. It offered summarized information and laboratory data on this syndrome.

This booklet was one of a series of 20 to 48-page booklets, approximately 5-3/8″ x 7-1/2″ in size, and of similar general appearance. These booklets were mailed singly at regular intervals over several months to all physicians in active practice.

We wished to determine physician reaction to this format, to determine the ultimate fate of this type of informative literature in the hands of the average practitioner, and its value to Schering as an advertising medium. We selected the one booklet cited above and decided to study it by means of a mail survey.

Approximately ten days after this particular booklet was mailed to the entire physician group, a special first-class mail letter survey was conducted, among 500 of these physicians.

Each physician selected for the survey was mailed a copy of "The Male Climacteric" booklet from which all identification had been removed. A special letter was enclosed, together with a questionnaire consisting of eight questions.

The survey was conducted under the name of an affiliated research organization in New York to preclude any influences upon respondents by association with Schering. Replies were received from 49.4 per cent of the physicians.

Replies were tabulated as received by grouping determined by the practice of the recipient, as general practitioners, specialists and osteopaths, internes and resident physicians.

The first question of the survey was, "Have you ever received a copy of this Booklet?" This was designed to determine the distinctiveness of "recall" of "The Male Climacteric" Booklet.

About two-thirds of the physicians stated that they

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Better Compounds

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BRANCH OFFICE and WAREHOUSE: 605 W. Washington Blvd., CHICAGO 6, ILL.

LIQUID
PRODUCT
PERFORMANCE
PLUS LONG
SHELF LIFE...
WITH REHEIS
DRIED Al(OH)$_3$
GELS!

When prescribed as an antacid, doctors acknowledge that Aluminum Hydroxide is most rapidly effective in freshly precipitated aqueous suspension form. However, this form is not always convenient – especially for ambulatory patients. For such applications, the practical answer has been found in powders, capsules or tablets.

Reheis Dried Aluminum Hydroxide Gels furnish the ideal ingredient for modern dry antacid preparation. They have remarkable hydrophilic properties that retain initial freshness and reactivity *for years.*

On your letterhead – write today for free samples and information

FINE REHEIS CHEMICALS

We invite you to consult our Technical Service Department for help with any problems you may have.

3956

REHEIS COMPANY, INC.
Manufacturers of Fine Chemicals
BERKELEY HEIGHTS · NEW JERSEY

remembered receiving the original mailing some 10 days previously.

This was most encouraging in view of the volume of mail received by most physicians. The fact that two-thirds of all respondents remembered the mailing indicated that the format and content were distinctive enough to make a lasting impression. The highest recall was found among general practitioners who reported better than 70 per cent remembrance.

When queried as "Did you read all or part of the booklet?", approximately four doctors out of five replying answered affirmatively. About half said that they had read part of the booklet, a third said they had read it all.

The percentage of physicians stating that they had discarded the mailing without reading it was relatively small. Most of the latter were specialists whose practice in general did not include treatment of the "Male Climacteric."

The ultimate disposition of a mailing piece is of prime concern to every pharmaceutical advertising manager. In this study the doctors were asked, "How did you dispose of the original mailing?" Approximately one out of every three of the physicians who remembered receiving the mailing said that they had filed it for future reference. This was a particularly high ratio. If we can assume that all of those who did not remember receiving the mailing, and all those who did not answer the questionnaire had discarded the booklet, then the percentage keeping it is approximately 20 per cent.

In order to obtain a more valid concept of the lasting value of this type of mailing a special tabulation was made of the replies given by those physicians who stated that they had read part or all of the monograph. Of the physicians who stated that they had read it, almost two-thirds had filed the monograph for future reference. This appeared to indicate that the booklet, "The Male Climacteric" was generally well received by the profession.

In order to determine to some extent the value of "The Male Climacteric" booklet and a monograph of this type as an advertising medium, the physicians were asked, "Which company do you associate with this booklet?"

Fourteen different companies were mentioned by respondents as being a sponsor of the mailing. Surprisingly enough 43 per cent of the respondents associated Schering with the mailing. This is an unusually high rate of identification. Another three per cent mentioned Schering but said that they were not certain and an equal number coupled Schering with another company as possibilities. The only other company named more than once or twice was our principal competitor in this field. Twelve and one half per cent of the respondents stated that they believed that our friends had sponsored the mailing.

Correct association of the monograph was greatest among general practitioners; lowest among specialists.

The lower percentage of correct association among the specialists was influenced by replies of those doctors who have no interest in this condition.

In an attempt to determine product association, we asked physicians to list the product or products which they believed had been mentioned in the booklet. Approximately one physician in four associated our androgen or male hormone product, "Oreton," with this booklet on the male climacteric. Although this was fairly satisfactory, it was somewhat below the 43 per cent of physicians who had identified Schering as the sponsor. Apparently our product identification and product mention had not been of sufficient impact or depth.

Slightly more than six per cent of the respondents associated the product of our principal competitor with the mailing.

The highest percentage of correct product association was found among the general practitioners—the lowest in the specialist group.

There was almost unanimous agreement among the respondents as to the value of "The Male Climacteric" monograph as an aid to the practicing physician. More than 96 per cent of the respondents said that such publications are of help to the physician. Of this number about a third stated that they believed it to be *very* helpful.

Again the greatest acceptance was found among the general practitioners. The few physicians who did not believe it would be valuable were primarily specialists who either did not believe in the prevalence of the condition or whose interest was essentially in other fields.

In evaluating the content of the monograph we asked the physician to indicate his likes and dislikes as to content and solicited comments and suggestions. We found that slightly less than a quarter of the respondents believed that the booklet was quite satisfactory in its current form. However, another group of equal size believed that more clinical evidence in support of the material was required. Also mentioned as desirable were more "case histories" and more medical illustrations.

This mail study was then followed by a personal depth interview type survey of physicians, distributed equally over general practitioners, specialists and internes, residents and osteopaths. These were located over the Middle Atlantic States. In a portion of the interview, these same questions were asked as above, after the cut booklet was shown to them. The replies were essentially identical, confirming the mail results. As a result, a number of observations concerning this format were drawn by our Advertising Division.

In general the monograph style of booklet was considered by the doctor to be helpful because of its conciseness and completeness. As well, it was liked because of its compact size, easy to read style. The general practitioners apparently liked the convenience of this type of brochure for ease of filing for future

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ROSE D'ORIENT EXTRA

A Perfect and Economical Substitute

FOR OTTO OF ROSE

ROSE PETALES CX116

An outstanding Rose Base

for fine perfumes

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PLaza 3-8618

CHARLES B. CHRYSTAL CBC MINERALS, CLAYS, COLORS 1897 NEW YORK

U.S.P.

•

PRECIPITATED CHALKS

•

COLLOIDAL KAOLIN

•

TALCS

CHARLES B. CHRYSTAL CO., INC.

53 PARK PL., NEW YORK 7, N.Y.

PLANT-WAREHOUSE: JERSEY CITY

reference. Some commended the quality of production of the booklet, the division by headings, and the adequate bibliography presented in support of its statements.

Because about one physician in four of those responding asked for more clinical evidence and specific case histories in support of many of the statements we deemed this a guide for future copy. One of the physicians stated, "In a booklet of this type I am interested in how many patients were treated, how long they were given the drug, and what follow-up was employed, when proven by charts, drafts, and figures."

Several physicians volunteered that while they appreciated receiving and diligently read booklets of this type, in many cases they believed that such brochures were lost in the mass of the advertising received daily. They asked for better identification on the covering envelope of the type of literature contained therein.

As a result of this survey several specific changes in format and content were adopted in subsequent mailings.

These recommendations included the following:

1. Subsequent mailings were limited in distribution to those physicians who would logically have a direct interest in the subject covered by the monograph. Thus each subsequent mailing has been prepared and distributed to general practitioners, osteopaths, and to those specialists only in whose fields of practice the subject of the monograph is appropriate. Internes and residents are now included where considered appropriate. Physicians over the age of 65 years, because they are not generally amenable to persuasion, and specialists in all fields where the use of the product is not likely to occur, were omitted from the list.

2. Clinical evidence from the literature, wherever possible in the form of direct quotations from documented authoritative sources, has been employed more frequently. The use of references and extensive supporting bibliographies has been emphasized.

3. Actual case histories selected from the literature and from the files of our Clinical Research Division are included wherever possible. These serve to illustrate for the physician the exact method of diagnosis, tests, and course of treatment which should be employed. It also serves to convince him by showing the ultimate disposition of the case, in support of a particular product claim.

4. Multi-color medical art, and conventionalized drawings are employed more freely where appropriate. Art for art's sake, however, is never included. There is more liberal use of data presented in the form of tables and charts.

5. Product identification has been improved by the frequent use of trade names throughout the text, in addition to mention of the generic name of the product. This is accomplished without destroying the scientific appearance and acceptance of the monograph.

6. Product identification is further improved by the inclusion in monograph mailings of 3 x 5 file cards listing on one side the principal indication (or disease) under discussion, and on the other the basic information concerning the nature, safety, use, dosage, packaging, and availability of the product.

7. The envelopes containing the monographs were modified so that their appearance would be consistent with the appearance of the monograph itself. As one of the primary appeals of the monograph appears to be its non-commercial appearance, a more professional conservative "look" was given to the envelope to enable the physician to select it from among the volume of regular colorful advertising material.

8. To further increase recall of the company name, more frequent use of the logotype and trademark has been resorted to, particularly on the back cover of the monographs.

9. In order to avoid having physicians considering that later monographs in a particular series are merely remailings, the cover design and cover stock is now modified to some extent in each case.

We believe that these observations were worth the effort and cost. We believe that they have contributed materially to improved identification of this literature upon receipt in the mail, increased readership and retention, greater recall and improved product acceptance and specification by the physicians to whom direct mail is sent.

This study of a typical pharmaceutical industry mailing to the medical and osteopathic professions illustrates the manner in which one company's advertising and market research organizations effectively worked together to use mail survey technic to determine physicians' preferences with respect to certain promotional literature, to introduce economies into this form of direct mail advertising, and to achieve concommitant increase in reader interest, reception, retention, recall, and brand specification.

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2. Associated Prescription Panel Service, 1956. Market Research Associates, Inc., Darien, Conn.
3. New Jersey Prescription Survey, Rutgers University College of Pharmacy, Newark, N. J., and Abbott Laboratories, North Chicago, Ill. Rutgers Pharmacy Extension News 6, 10, April 1956.
4. de Haen, Paul. "New Drug Products in 1955." Drug and Cosmetic Industry, March 1956.
5. Noyes, Dorothy. "Disposable Professional Time," Drug and Cosmetic Industry, May 1956.
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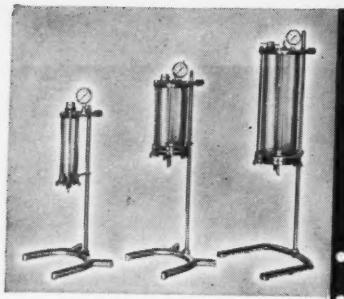

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21	2800	96	5½"	21
10	1300	45	4¼"	9.62
9	260	9	2¼"	2.24

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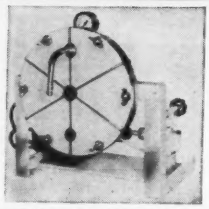

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(*Continued from page 163*)

have melting points considerably higher than the corresponding fatty acids or their esters. One such product on the market which is the stearic acid amide of monoethanolamine, has a melting point higher than carnauba wax, though it is not nearly as hard. It is utilized as an opacifier in liquid cream shampoos. The stearic acid ethanolamide because of its free hydroxy group may be used as a means of jelling water, alcohol and glycerol mixtures or in emulsions where it is felt desirable to incorporate a high melting point substance. These materials have not been too thoroughly explored, but it may be expected that they will be used to a greater extent than they are at present. The corresponding myristic acid and lauric acid monoethanolamides are the subject of patents, where their use as detergency stimulators with detergents is described.

In addition, there are a host of liquid waxes made from fatty acids and monobasic lower molecular-weight alcohols, such as butyl stearate, isopropyl myristate, and others, which while they are not the conventional waxes, are characterized by their low viscosities and are, therefore, used instead of oils where a thin film is desirable. They have the further advantage of not turning rancid, since there is no olefinic linkage present to be attacked by incipient oxidation.

One of the most familiar classes of waxes—though they are not strictly speaking true waxes, are the large number of hydrocarbons available. Ozokerite, which is a high melting point wax is so microcrystalline in its structure that it is pliable with pressure. It is used to a great extent in creams, to impart a soft non-thixutropic stiffness. The paraffins—particularly those having melting points in the area 135-145° F. are highly crystalline and are used in both lipsticks and creams to impart an easily broken down thixotropy.

In the future the list of cosmetic waxes will be greatly enlarged since there is a great deal of work being done in other industries in the development of coatings. Unfortunately the cosmetic industry does not use a large enough volume of any one wax to make it economically feasible to support a research program directed towards the entire use of this product by cosmetic firms. I believe, however, that it will be possible to utilize a compound developed for other industrial applications for cosmetic application as well. In this connection the work being done in polymers is of interest. P.V.P. for example is now widely used as a cosmetic material.

PHARMACEUTICAL PERFUMING

(*Continued from page 165*)

methyl anthranilate, methyl naphthyl ketone, and indoles may cause discoloration. Frequently, in an alkaline media, methyl anthranilate may yield a disagreeable odor. There have been reports that methyl

anthranilate in the presence of aldehydes forms condensation products that may be skin irritants. Orange blossom odors are valuable for covering fatty notes and odors.

LILY OF THE VALLEY fragrances are most useful in high alkaline creams, but are also used in mild or neutral creams. The odors cover extremely well. The lily of the valley notes are most useful for the newer detergent and emulsion bases. They stand up very well in such media. If the lily of the valley perfume has a high proportion of hydroxycitronellal, then don't use it in high stearate creams for here, you will get a strange, garlic-like note.

Lilac is one of the most popular odors for pharmaceutical lotions, and is extensively used in the cosmetic field in hand lotions and creams, and widely used in shampoos. It is an unusually economical and stable product. There are as many lilac variations as one can imagine from the spicy to the vanilla heliotropes to the deep lilac jasmins. Because of the wide floral twists of this odor, a reliable supplier of compounds is extremely important to avoid odor maladjustments, color changes, or irritating factors. Compounding in this entire floral field is a real physiochemical art.

It is surprising that in the general classification of pharmaceutical ointments and creams, there has been a broad change in the nature of emulsions. In many alert and forward-looking pharmaceutical houses, there has been a complete reassessment of the value of having these preparations cosmetically and esthetically acceptable to women. While, of course, it is necessary to have medicated creams have a reassuring odor, that does not necessarily mean that it must be touched with phenol, camphor, menthol, eugenol, and eucalyptol, many of which components could be in themselves primary irritants, and some of them are materials to which a number of people are quite sensitive.

There is no reason why a woody, mossy, fernlike, herbaceous note should not be used eliminating other aromatic materials which might be inherently troublesome. With the widened use of non-greasy and washable ointments medicated, solubility factors are uniquely important in compounding a fragrance.

One of the rather complex problems that confront the perfume adapter in a pharmaceutical organization is how to make a perfume oil stay in solution, and not upset the emulsion or be incompatible to creams or ointments. Most perfume oils have a solubility of less than 0.5 per cent, in 50 per cent alcohol solutions. Such solutions immediately become turbid, and many a pharmaceutical chemist has found that alcohols are not good dispersing agents for perfume oils when such solutions are introduced into water.

Citrus oils including the family of bergamot, lemon lime, and orange in 60 per cent alcoholic solutions have an average solubility of 0.1 per cent to 0.2 per cent and the orange flower oils have a solubility of

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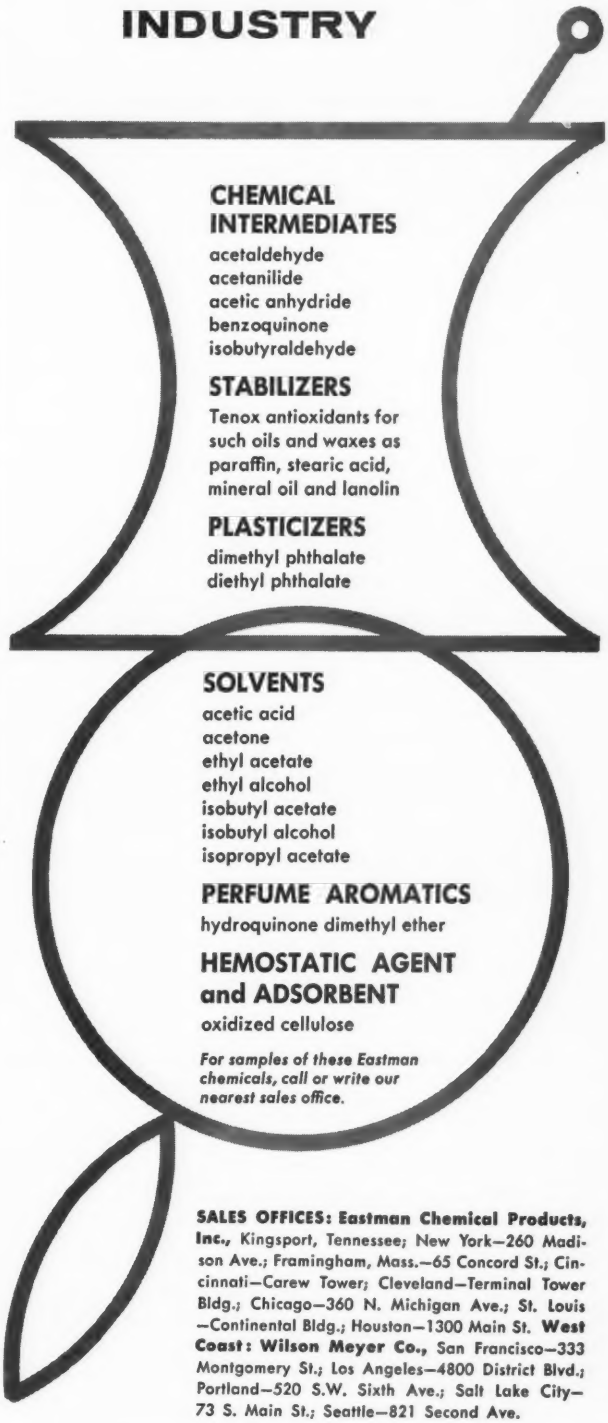

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0.7 per cent in the same alcoholic concentrations. Of the many natural oils used in pharmaceutical applications in 60 per cent alcohol, there are reasons for using these oils because old time pharmacists found they had good solubility.

Clove Oil	18	per cent
Geranium Oil	1	per cent
French Lavender	1.5	per cent
Palmarosa Oil	15	per cent
Rosemary Oil	0.5	per cent
Rosewood Oil	0.1	per cent
Sandalwood Oil	1.0	per cent

Many of the terpenyl alcohols are quite soluble, such as anisic, benzyl, and phenyl ethyl. The terpene alcohols are less soluble. Of the resinoids often used, oakmoss and labdanum frequently cause cloudiness. The lilac types of perfume are most soluble in low alcohol concentrations and strangely enough, the true eau de cologne characters are most difficult to solubilize in low alcoholic compositions.

For low alcohol solubility of cologne type odors, terpeneless citrus oils are used.

I am sure that you all know how to make flower oils by rubbing these oils with a talcum or magnesium carbonate, and adding these mixtures to distilled water with benzoic acid as a preservative, shaking frequently for several days and filtering.

In the cosmetic industry as well as in the pharmaceutical industry, perfumes and flavors are solubilized by emulsifying with soluble gums: tragacanth, arabic. But such solubilizers are not suitable for transparent lotions.

The first soaps used for solubilizing were triethanolamine soaps of castor oil and fatty acids producing groups of soap ions to form large aggregates or micelles.

The more modern solubilizers are the Tweens® for water solubilizing and Spans® for oil solubilization. The problem of water solubility with Tweens is that it usually takes six parts of Tween to one part of perfume oil to induce solubilization. It is then necessary to use anti-foaming agents such as octyl alcohols and silicone anti-foamers to cut down the excessive foaming when shaking or packaging. A profound difficulty is that solubilizers have a fatty note and severely depress the quality of perfumes.

The preservative action of perfume components against molds and organisms have long been employed in the pharmaceutical industry. Many essential oils and synthetic perfumery materials exert a strong, bacteriostatic action on micro organisms. These are well-known. A popular, aromatic component, phenylethyl alcohol, is suggested in a number of preparations. While this bacteriostatic effect of essential oils and aromatic chemicals was useful for early pharmaceutical preparations, with the broad unfolding of newer anti-mold and bacteriostatic agents, these latter agents are now used to a better advantage.

One of the problems affecting perfumes in pharmaceutical products is the broad use by the pharmaceutical industry of hydrogenated fats and oils, as well as almond and peach kernel oils and some other vegetable oils. Intrinsically, these have a weak basic odor which upon aging is replaced by a strong, fatty disagreeable note. Unfortunately for the pharmaceutical perfumer, these odors are easily covered by perfumery components when the product is fresh, but time and age soon unhand the perfumer. Here, more importantly than elsewhere, early liberal use of perfume must be used. Where ¼ of one per cent might be indicated initially, ½ per cent might be much safer, three to four months later. Any product containing these hydrogenated bases and some emulsifiers may develop strong, fatty notes after six to eight months of shelf life.

One of the interesting but unhappy accidents that occurs to perfumes is the effect of traces of residual bleaching agents left in hydrogenated fats and vegetable oils: these play havoc with perfume at a very rapid rate. They are one of the most destructive agents in pharmaceutical perfuming.
Sometimes decomposition odor development of these fats can be avoided by the use of proper anti-oxidants in the pharmaceutical product. Anti-oxidants should be used as routinely as an anti-molding agent is used.

The chemical reaction of these fatty components is often with the aldehydes. This development of hemiacetals or acetals causes untoward perfumery problems. Small quantities of hydrogenated fats will bind up tremendous quantities of aldehydes, thus the perfume loses its quality and intensity.

Intensity of odors has been a long study in this general field. The original work was reported in Germany by A. Ellmer in "Pf. Ztg." Here, Ellmer put many products on blotters and carefully observed the length of time they remained on the blotters.

This work was complemented by a study of A. B. Luque who carried on another procedure and observed dilute solutions of aromatics in alcohol under constant temperature bath. They both reported strange quirks in odor tenacity.

TENACITY OF AROMATICS

	According to Ellmer	According to Luque	
Cineol	2		360
Methyl Salicylate	6	1	130
Amyl Acetate	24	4	680
Heptyl Alcohol	24	4	690
Anethol	24	4	730
Benzyl Cinnamate	24	4	790
p-Methyl Acetophenone	24	4	820
n-Octyl Alcohol	24	4	820
Borneol	48	8	460
Terpineol	48	9	260
Linalyl Acetate	48	9	340
Bornyl Acetate	48	9	380
Bromstyrol	48	9	440
Anisic Aldehyde	48	9	540
Menthol	48	9	580
Phenylethyl Alcohol	72	12	800
Nerolin	72	1	320
Citronellol	120	31	600
Nerol	120	31	800
Methyl Anthranilate	120	32	400
Nonyl Aldehyde	120	62	600
Heptyl Aldehyde	144	37	400
Methyl Heptine Carbonate	144	38	200
Eugenol	192	37	200

Geraniol		192	38	200
Amyl Salicylate		168	39	900
Geranly Formate		216	41	400
Cinnamic Aldehyde		246	46	800
Hydroxy Citronellal		336	65	900
Cinnamic Alcohol		360	69	800
Coumarin		384	75	900
Phenyl Acetaldehyde		504	9	600
Isopulegol		600	10	800
Santalol	1	368	265	000
Vanillin	1	440	279	000
Cuminic Aldehyde	2	472	408	000

TENACITY OF ESSENTIAL OILS

		According to Ellmer	According to Luque	
Oil Dill		24	4	680
Oil Anise		24	4	760
Oil Lemon		72	13	600
Oil Sage		72	13	800
Oil Chamomile, Roman		72		..
Oil Petitgrain, Paraguay		96	17	400
Oil Geranium, Bourbon		96	18	500
Oil Marjoram		120	20	700
Oil Cinnamon		120	21	500
Oil Angelica		168	30	200
Oil Citronella, Java (85 per cent)		192	38	400
Oil Hyssop		216		..
Oil Sage Clary		240	46	500
Oil Patchouly from leaves		324	63	200
Oil Sandalwood, E. I.		672	129	000
Oil Chamomile, German		840		..
Oil Rosemary	1	032	224	000
Oil Arnica Flowers	5	640		..

A more recent study was done by Walter A. Poucher who reported his work in the Society of Cosmetic Chemists' Journal, on the same problem. His was a more outstanding work by a world-wide, well-known perfumer scientist.

It is easy to see that the problems of pharmaceutical perfuming are not readily attacked by amateurs. The scope reaches so far beyond normal chemical knowledge that is provided in colleges, universities, and schools of pharmacy, that it is better left to experts in the particular field involved.

The literature is replete with the most erroneous data regarding the affect of perfumery ingredients on skin. The most erroneous conclusions have been drawn by prior research, which consisted mostly of checking the literature and varying the language. Each time some perfumery ingredient has gotten more hazardous —not by clinical study, but by bibliographical repetition.

GAS CHROMATOGRAPHY

(*Continued from page 167*)

the width at half the height, we get the area of a triangle of the approximate dimensions of the band. This area is ratioed against the area of the other peak and both figures are normalized to 100 per cent.

A second, and for cosmetics applications very possibly more important, application is that of the establishment of identity of a sample without actually doing a quantitative analysis. For example, in many cases, the difference between an acceptable product like an essential oil and an unacceptable product, may be qualitatively very small. Further, the materials, themselves, may be rather complex mixtures rendering a complete qualitative and quantitative analysis an extremely laborious task. Let us suppose that we had an essential oil, say a lemon oil. We

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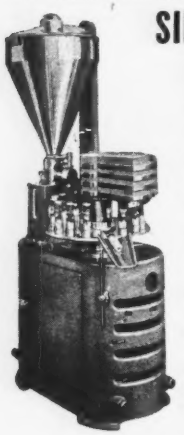

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know from previous experience that this is an acceptable oil, and we wish to determine whether some new oil, possibly procured from another supplier or some other like material source, is actually the same or is the same within certain specification limits. A Fractometer run of oil "B" under exactly the same conditions as oil "A" will show any qualitative or quantitative distinction between them. I think that we can all see that oil "B" is qualitatively very similar to oil "A," but that there are certain quantitative differences between them. With experience in chromatographic handling of this type problem, we could possibly set up specifications for acceptability of complex materials of this type based upon the degree of identity of the chromatograms. This would require a correlation study to determine what degree of quantitative or qualitative difference between the two samples, as determined by gas chromatography, was sufficient to produce an objectionable distinction between two materials in actual use.

A third and equally interesting application, from the point of view of cosmetic work, is the determination of impurities or adulterants in volatile materials. The great advantage of the Fractometer over most other types of trace detection systems, is the extreme low selectivity of the gas chromatographic technique. That is, any trace of impurity, provided it has reasonable volatility and is present in amounts sufficient to surpass the minimum detectability limits of the instrument, will be shown on the fractogram. In other words, we can detect impurities without having any idea as to what they may be or even whether they exist at all. The importance of this in quality control applications is obvious. Figure 3 shows runs of pure, common cosmetic goods ingredients and those same ingredients with small traces of various impurities. Because of the ability of the operator to vary the sensitivity of the instrument within very wide limits, it is possible to observe and measure extremely small quantities of impurities in "large" samples.

Lastly, a very useful application, which has not yet been fully investigated, is the use of gas chromatographic equipment for the preparation of high purity samples from complex mixtures. Figure 4 shows a fairly complex cosmetic ingredient in which we might be interested in identifying, or purifying, or otherwise using the material represented by band 1. By use of a sample collection system which is a standard attachment on some gas chromatographic equipment, we can shunt the gas stream to a suitable collection device and either condense, or absorb, or otherwise isolate any constituent in which we are interested. For example, at the point at which component 1 started to appear in the detector, as represented by the beginning of its band on the recorder chart, the flow was shunted into the collecting attachment. The exit gas, now containing component 1, was bubbled through a suitable solvent and analyzed in a double beam, infrared spectrophotometer, using the pure solvent as a ref-

erence material. In this way, an identification of a pure component of an originally complex mixture may be obtained in a hypothetical case. The same collection system could be used to isolate a pure component for possibly determining whether it is the source of a desirable or undesirable odor in a mixture, or any other analytical or preparative purpose whatsoever.

In this connection, it might be mentioned that one of the advantages of gas chromatography for most applications, the use of extremely small samples on the order of 1 to 10 microliters, becomes a disadvantage when the apparatus is being used for preparative work. On a standard instrument the column diameter of ¼" forbids the use of large samples. If a column is "overloaded," the resolution of the analysis is drastically reduced. From the design of the column and detector area of the vapor fractometer, it can be seen that columns considerably larger than ¼" in diameter can be installed, provided that reducing fittings are placed on the end of the column to allow their attachment to the detector outlet and inlet fittings. Without any modification of the instrument, therefore, up to 2 meters of 1" diameter column can be used in the instrument. Since column capacity varies generally with the square of the diameter, we can calculate that the capacity of a 1" I.D. column will be at least 20 times that of the standard column which is ¼" O.D., 3/16" I.D. This type of column would allow the preparation of a pure sample of reasonable size from one sample injection rather than having to repeat the separation several times in order to obtain a sample sufficient for most analytical or synthetic work.

The above four general types of application summarize the potential of this type of instrumentation to analytical problems. The range of specific applications in the toilet goods industry has not yet been even summarily investigated. This is not merely a function of the novelty of the technique itself, but is largely due to the fact that it is only in very recent months that instruments have been available which could operate efficiently at high temperatures; that is, temperatures of the order of 200° C. Since a large proportion of the materials of interest to cosmetics chemists are rather high boiling, the development of these instruments was a requisite to the solution of cosmetic problems.

As a final demonstration of the power of gas chromatography as opposed to distillation or similar separation procedures, let us examine the effect of variation of column substrate or separation response of the instrument. Figure 5 shows the different type of separation which can be obtained under the same conditions of temperature and gas flow by simply varying the material used as the stationary phase of the column. Materials used were, in one case, a silicone oil, and, in the other, a high molecular weight polyglycol. It is this difference in separating power which is at once the source of the extreme versatility of the gas chromatographic technique, even though it is, to a certain extent, a difficulty in practice. That

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is, the vast number of possible column materials makes it almost a certainty that any two components of a mixture can be separated by proper choice of column. However, this also means that the laboratory worker is possibly confronted with a great deal of preliminary work in selecting the proper column substrate for a given type of analysis. This should be emphasized in any discussion of gas chromatography at present because, in spite of the intense interest which this new field has engendered, we must understand that, as far as the investigation of such parameters as column substrate selection, the surface of the problem has barely been scratched. Therefore, it is impossible to say, at this time, just what the limits of separation ability are when using this technique.

There are certain difficulties which I have encountered in my own work which I believe deserve mention in any fair survey of the field. First, and most important in toilet goods analysis, is probably the inability of present column materials to handle aqueous solutions with a facility comparable to non-aqueous mixtures. This is particularly true for separation of low-boiling mixtures containing large quantities of water. Second, the problem of boiling range has not yet been satisfactorily solved. By this we mean the ability to successfully separate and analyze mixtures containing very low boiling and very high boiling components; such as, a mixture of light alcohols and glycols. If low temperatures are used for the analysis, the retention time of the glycols is excessive; while if high temperatures are used, the resolution of the low-boiling materials is lost. Many finished toilet goods preparations, unfortunately, fall into this category; for example, after shave lotions. The best solution to the analysis of this type of sample is that of dual analysis consisting of a low-temperature run plus a high-temperature run, whose results may be integrated by means of internal standardization of precision sampling techniques.

In summary, I believe that gas chromatography has provided a highly versatile tool for the chemist. Its possibilities in solving problems of quantitative analysis, compound "fingerprinting," and pure sample preparation, are such that within a short time the technique should take its place along side such standard tools as the spectrophotometer and the column still as standard equipment in the analytical laboratory.

CHEMICAL RESEARCH AND PERFUMES

(*Continued from page 169*)

been made in the search for aromatic compounds suitable for use in perfumes and flavors. Today, the average perfumer surrounds himself with possibly two thousand different perfume-making components with which he is familiar. There is no doubt that there are this many more, or twice as many more, compounds

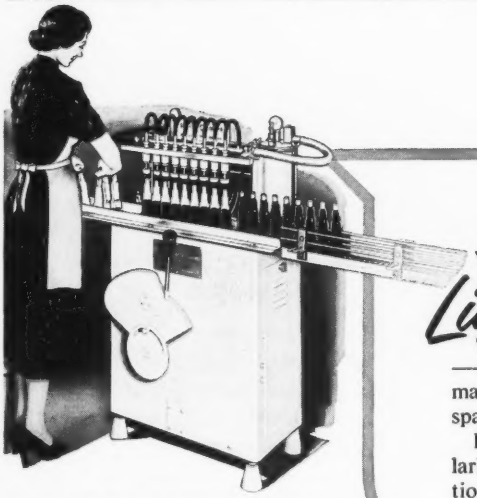
that are in use in different parts of the world as the private ingredients at the disposal solely of the firm which has conceived and manufactured them.

Not only have the olfactory senses of the perfumer expanded and matured, but the general public, as well, has learned to derive enjoyment, not from natural fragrances alone, but also from those created by chemists. The public's olfactive pleasures have grown in proportion to the number of new perfume notes presented to them by the perfumers, and it can be observed that the fashion for certain perfume notes is always preceded by achievements in research. For example, the famous perfumes, based on aldehyde notes, fruity notes, green notes, woody notes, animal and amber notes, became truly popular only after aromatic chemical research has brought out one or several products in these categories. Most women, however, still think that only natural materials are used in the finest perfumes, and, therefore, do not appreciate the great contribution made toward their exotic pleasure by chemical research and synthesis.

Chemical research is responsible for the fact that perfumes can now, more than ever before, be adopted to modern living. It is a fact that the public demands a stronger perfume today because receptive senses are influenced by smoking or drinking, as well as impurities in the air they breathe. Only with very strong aromatic chemicals is it possible to achieve the desired effect. Also, since most social functions are now held in air-conditioned atmospheres, the strength and diffusive qualities of perfumes have to be intensified to be effective in this steady flow of mechanically cooled and treated air. This diffusive quality of which I speak is particularly affected by air-conditioned atmospheres. This is the quality in a fragrance which, in a sense, projects the scent away from the wearer and into the atmosphere, so that its pleasant effect reaches out to the olfactive sense of the others present. It is a genuinely exotic quality much desired and difficult to sustain in the modern mode of living.

Apart from the perfumes used directly on the person for pleasing aromatic effects, chemical research is also champion of perfumes used in odor control in industry. Clothing, cosmetics, packaging materials, pharmaceuticals, and many other products manufactured from materials with harsh or displeasing odors, would be greatly offensive to the male, as well as the female consumer, were it not for the subtle fragrances imparted to them. Thus, not only has chemical research increased the sales acceptance of innumerable products, but, by enabling perfume to enter our daily lives via more vehicles, it has, in a sense, bettered our standard of living.

Besides producing new aromatic chemicals, research has also helped the perfume industry by creating new packaging materials, such as stainless steel and polyethylene and other plastic products. The lightness, unbreakability, flexibility and ability to be molded into an infinite variety of shapes, make the polyethylene container a valuable new packaging element for



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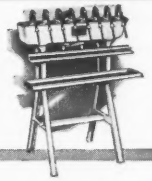

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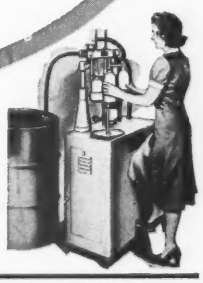

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perfume, lotions, hair dressings, and many other liquid perfume products. Although it is still far from perfect, polyethylene is, nevertheless, a product which could, and already does, add the very modern charm of attractive functionalism to perfume packaging.

Still, another step toward the future which chemical research helps perfumery to take is the invention of new gases which can be used as propellants in atomizers. In the aerosol package, the fragrance of even the most delicate perfumes is protected from volatilization and oxidation by the inert atmosphere of the propellant. The very slight characteristic propellant note apparent at the moment of release disappears almost instantly, leaving only the ultimate dried note of the fragrance. Not every product can be easily switched from bottle or can to aerosol package, because some propellants may be unstable in the presence of many common fragrance components, and may, perhaps, cause discoloration, clogging, sedimentation or other adverse effects. But, the happy marriage of perfume and propellant is possible through the careful design of both. To this end, we can well trust the chemist to find the method by which the virtues of aerosol packaging can be made completely practical for the perfumer's use, for he has done so well for us in the past.

After looking back on fifty years of tremendous developments in chemical research, we can confidentially look forward to even greater achievement. When we think of the art of perfumery, with its history reaching back thousands of years to times when flowers and bark were literally hand-pressed for their precious aromatic oils, it is interesting to contemplate a future where the use of atomic radiation may produce entirely new chemicals for the perfumer to use in his ancient and honored art of fragrance creation.

SPECIAL DISCOUNTS v. PROMOTIONAL ALLOWANCES

(Continued from page 185)

maining sections of the Act combined. What is more, such charges, whether brought by the Commission or treble damage claimants, have tended to drift far beyond promotional arrangements to strike at all sorts of commercial accommodations when not available to every customer alike.

Compliance with 2(d) and (e) as now construed thus entails a basic choice for the seller. On the one hand, he may formulate and publicize a carefully administered cooperative plan whereby each competing wholesaler *and* retailer handling his product receives promotional benefits, either through display materials directly or in the form of money allowances, amounting to a uniform percentage of his dollar purchases. Or, the seller may bypass 2(d) and (e). He can give straight price reductions in comparable amounts to customers selected on the basis of their effective merchandising of his product—but not as "compensation"

or "in consideration" for, or as a "contribution" to, any particular promotional activity on their part. Also, the seller himself may take over all promotional expenditures for his product, and pass on all or part of the costs in the form of price increases to those distributors mainly benefiting from his campaign.

So again, forms or nomenclature can spell the difference between illegality *per se* or a determination under the more flexible criteria of the price discrimination provisions.

That paradox may shape the legal developments of the future. Already judicial as well as FTC rulings are moving toward the sound principle that Sections 2(d) and (e), despite the boundless potentialities of the terms "service" or "facility," must be confined to the control of promotional or advertising arrangements connected with the resale of the supplier's product to the public. Otherwise freight allowances, functional prices, and miscellaneous terms of sale might face *per se* illegality rather than the Section 2(a) standards governing "direct" and "indirect" price discriminations.

The most salutary reorientation, however, would be to equate Section 2(d) and (e) entirely with the bans on "indirect" price discrimination in Section 2(a). If any discriminatory advertising arrangement which did not provide "proportionally equal" benefits among competitors were deemed an "indirect" discrimination rather than illegal *per se*, all maneuvering for a pleader's advantage by invoking one provision over another would vanish. In the same way, if the sanctions on price and promotional discriminations were identical, legal immunities could no longer depend on a choice of verbal forms.

Such a reappraisal is peculiarly appropriate today. Now that the concept of "proportional equality" clearly refers to uniform promotional benefits dollar for dollar of every competing customer's purchases, any deviation is in essence a discriminatory offset against the favored customer's purchase price. This is precisely the sort of concealed offense contemplated by the general ban on "indirect" price discriminations in Section 2(a).

PATENT THOUGHTS AND TRENDS

(*Continued from page 201*)

present in the system at the same time.

The antihistamines and local anesthetics usually contain a secondary amine group which replaces the quaternary ammonium group of the choline. The substitution of the secondary amine group for the quaternary ammonium group affords some relief from the effects of cholines but it does not block or counteract the effect of the quaternary ammonium group itself. Various efforts have been made to counteract or block the effect of the quaternary ammonium group but these efforts have been unsuccessful in that they

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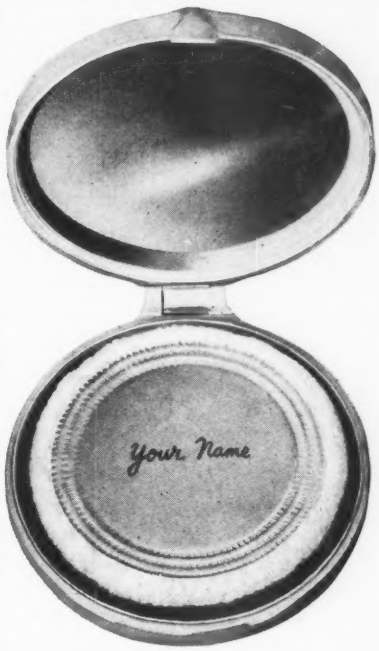

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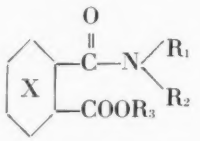
have affected only the hypersecretion effect or because the effect was limited to the area of injection.

The patentees have found that when a cyclohexene or cyclohexane derivative of a secondary amine base is introduced into the system, complete relief from muscle spasm is obtained.

A better idea of the actual compositions disclosed as well as the coverage obtained is given by claim 1 taken from the patent.

A new composition of matter having the formula

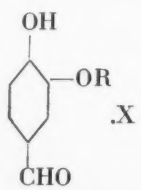


in which the ring X is selected from the group consisting of cyclohexene and cyclohexane, R_1 is selected from the group consisting of methyl and ethyl groups, R_2 is selected from the group consisting of methyl and ethyl groups, and R_3 is selected from the group consisting of hydrogen and magnesium.

New Flavors and Odorants

A Monsanto inventor has obtained U. S. patent 2,774,791 on new water soluble solid complexes said to have exceptional utility as flavoring agents for beverages and foodstuffs as well as having utility as odor masking agents in rubber and synthetic resinous compositions. Some of the new materials are said to be useful in combinations with coumarin as effective fixatives for perfumes and oils.

The structure of these new materials is uncertain but they are believed to be addition products of the formula:



wherein R represents an organic radical and X represents an alkali metal carbonate or bicarbonate or an alkaline earth metal carbonate. Illustrative, but not limitative, of the organic radicals, represented by R in the above formula, which may be present in the solid complexes of this invention are the saturated alkyl radicals, such as methyl, ethyl, propyl, isopropyl, butyl, sec. butyl, isobutyl, tert. butyl, amyl, hexyl, 2-methylpentyl, 2-ethylhexyl, decyl, tetradecyl, octadecyl, etc.; unsaturated aliphatic radicals, such as allyl, methallyl, crotyl, etc.; substituted aliphatic radicals, such as methoxyethyl, propoxyethyl, ethoxyethyl, 2-bromoethyl, benzyl, phenylethyl, etc.; aryl radicals, such as phenyl, naphthyl, biphenyl, etc.; substituted aryl radicals, such as cresyl, chlorophenyl, 2,4-dichlorophenyl, pentachlorophenyl, xylyl, mesityl,

p-tert. amylphenyl, o-methoxyphenyl, p-nitrophenyl, o-iodophenyl, m-aminophenyl, etc.; alicyclic radicals, such as cyclohexyl, cyclopentyl, etc.; and heterocyclic radicals, such as furfuryl, tetrahydrofurfuryl, etc.

RECENT PATENTS

2,767,200—G. W. Rapp—Reaction Product of Copper Gluconate and Alkali Metal Salt of N-Lauroyl Sarcosin.

2,767,207—Mizzy, Inc.—Betz (N-Propylamino) Beta, Beta-Dimethyl Ethyl Benzoate.

2,767,213—Parke, Davis—Resolution of Methylmercaptophenyl-aminopropane-Diol.

2,767,215—Glidden—Verbenone Preparation.

2,768,081—Bristol Labs.—Poultry and Livestock Feed.

2,868,112—Bristol Labs. — Repository Vitamin Compositions.

2,768,113—Clinical Research Found.—Therapeutic Composition of Procaine and Adrenaline Precursor.

2,768,114—Am. Cyanamid—Rabies Vaccines.

2,768,115—Bristol Labs.—Penicillin-Aspirin Tablets.

2,768,116—Am. Home Products—Enzymatic Synthesis of 4-O-β-D-Galacto-Pyranosyl-N-Acetyl-D-Glucosamine Using Living Cells.

2,768,117—Bristol Labs.—Productions of Penicillin Employing Media Containing Cytidene and Cysteine.

2,768,163—Ciba Pharm.—Process for Preparing 9, 11-Oxido-Steroids.

2,768,164—Societe des Usines Chimiques Rhone-Poulenc (France)—Phenoxy-Alkylamino-Alkylphenothiazines.

2,768,165—R. D. Schuetz — Aminoalkylthienyl Sulfides and Method of Preparing.

2,768,166—Am. Home Products — Substituted Glycinamides.

2,768,184—Ciba Pharm.—Process for Preparing 11-Hydroxy-Steroids.

2,768,185—Ciba Pharm.—Process for Producing $\Delta^{9,11}$-7-Keto-Steroids.

2,768,186—Ciba Pharm.—Process for Preparing $\Delta^{8,9}$-7-Hydroxy Steroids.

Court Cases

2,502,151—R. J. Horclois, Dimethylaminoalkylamino antihistaminic compounds, filed Nov. 20, 1956, N. Y.: Merck v. Hexagon Labs.; N. J.: Merck v. Chemo Puro Mfg.

2,753,288—F. E. Visscher, Scopolamine lower-alkyl halide therapeutic composition, filed October 19, 1956, Miami, Fla., Upjohn v. A. G. Marin Pharmaceuticals. Same, Springfield, Ill., Upjohn v. Lincoln Laboratories.

2,748,052—A. Rosner, Therapeutically active compositions containing amphetamine, filed Oct. 29, 1956, New York, Rexar Pharmacal Corp. v. Delco Chemical Co.

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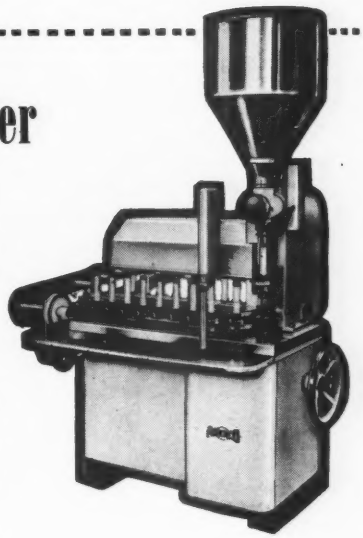

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WANTED: Equipment for manufacture of cologne sticks including kettle and moulds; also a drum heater and drum lift. Respond giving description and price. Box F-2, DRUG & COSMETIC INDUSTRY.

Help Wanted

COMPETENT SALESMAN WANTED: Write or Phone: NOVILLE ESSENTIAL OIL CO., INC., 1312 Fifth Street, North Bergen, N. J., Tel. UNion 7-9080.

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